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OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORTMAINTENANCE MANUAL

INCLUDING

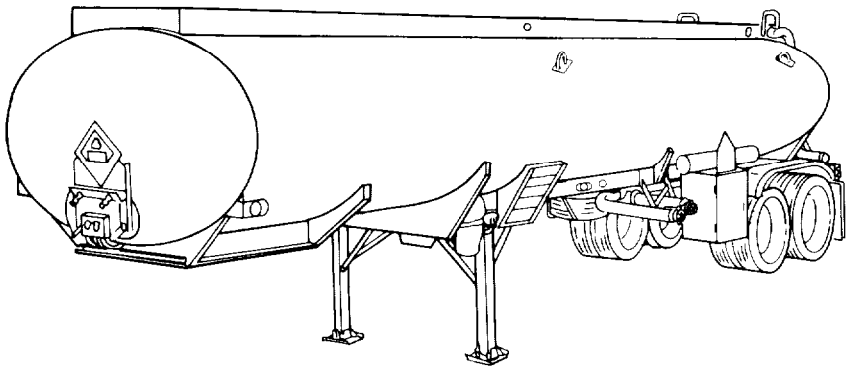
REPAIR PARTS AND SPECIAL TOOLS LISTS

FOR

SEMITRAILER, TANK, FUEL, 7500 GALLON, M1062

(2330-01-275-7475)

Fruehauf Corporation
Liquid and Bulk Tank Division
Contract No. DAAE07-87-C-J061



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HEADQUARTERS, DEPARTMENT OF THE ARMY 9 JULY 1990

WARNING

STATIC ELECTRICITY AND FUEL ARE A DEADLY COMBINATION!

1. The M1062 7500 Gallon Fuel Tank Semitrailer carries flammable fuel. Loaded or empty, operation and maintenance of the semitrailer can be dangerous. When loading and unloading fuel, static electricity is formed. When performing maintenance, a wrench slipping on a fastener and striking another metal object can create a spark; if a spark comes in contact with fuel or fuel vapors, a fire and explosion will result.

2. Personnel must read and follow all WARNINGs listed on these pages before operating or maintaining the M1062 7500 Gallon Fuel Tank Semitrailer. These pages contain a summary of all the WARNINGs found in the manual.

3. Read Chapter 1, Section IV, General Safety Regulations and paragraph 2-18, General Fuel Handling Requirements.

4. For First Aid information, refer to FM 21-11.

THE BEST DEFENSE AGAINST SERIOUS INJURY OR DEATH IS KNOWLEDGE

WARNING

ACCESS TO TANK

- Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.

- Grabhandles on top of semitrailer are dismountable. Ensure that they are securely mounted before using them. Failure to follow this warning may result in serious injury to personnel.

- Use caution when opening manhole primary latch. If there is pressure buildup inside tank, it must first be relieved, then manhole primary latch slowly opened. Failure to follow this warning may result in serious injury or death to personnel.

- Stand clear of fill cover when opening manhole. Pressure buildup inside tank may cause fill cover to fly open. Failure to follow this warning may result in serious injury or death to personnel.

WARNING

BRAKES

- Cautiously feel each wheel hub and drum. Wheel hub or drum may be hot. Failure to follow this warning may result in burns.

- Wipe clean excessive lubricant in area of brake shoe linings to avoid grease soaking the linings. Replace grease soaked brake shoe linings. Failure to follow this warning may cause brakes to malfunction, resulting in serious injury or death to personnel.

- Wear safety goggles and face shield when performing leakage tests on valves. Failure to follow this warning may result in serious eye injury due to high pressure air.

- DO NOT use a drum that exceeds maximum wear specifications. Failure to follow this warning may result in brake failure and serious injury or death to personnel.

- DO NOT cage brake chamber spring until chock blocks are properly positioned at wheels. Once brake chamber springs are caged, semitrailer is without brakes and can roll. Failure to properly chock wheels may result in serious injury or death to personnel.

- Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop resulting in brake lockup and possible serious injury or death to personnel.

WARNING

CLEANING

- Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

WARNING

COMPRESSED AIR

- Compressed air used for drying or testing purposes or to clear restrictions must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

WARNING

COUPLING AND UNCOUPLING

- All personnel must stand clear of semitrailer and tractor during coupling and uncoupling operations. Failure to follow this warning may result in serious injury or death to personnel.

WARNING

ELECTRICAL SYSTEM

- DO NOT plug both inter-vehicular electrical cables into semitrailer. Failure to follow this warning may result in damage to electrical system or form sparks causing a fire or an explosion.

- When troubleshooting an electrical malfunction or performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

WARNING

EMERGENCY VALVE

- Socket valve is spring loaded. Use extreme caution when handling it. Piston and spring must be compressed during disassembly and assembly, then carefully released. Failure to follow this warning may result in injury to personnel.

WARNING

MAINTENANCE INSIDE TANK

- When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.

- NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. If a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.

- DO NOT perform any welding procedure unless tank is purged. Failure to follow this procedure will result in serious injury or death to personnel.

WARNING

FUEL HANDLING AND PURGING

- Follow all fuel handling and purging procedures precisely to prevent serious injury or death to personnel.

- Operator must be alert at all times for leaking or malfunctioning equipment. IMMEDIATELY stop all fuel handling operations at the first sign of leaks or malfunctions. Corrective action must be performed by qualified personnel before resuming any operations.

- DO NOT open vent cap except to purge tank. With vent cap open, vapors inside tank could ignite if a spark is produced. The resulting fire and explosion will result in serious injury or death to personnel.

- DO NOT breathe fuel fumes. They are toxic and can cause serious medical problems. Failure to follow this warning may result in serious injury or death to personnel.

- DO NOT smoke while loading or unloading fuel, when handling fuel containers, or when located within 50 ft. (15.25 m) of fueling and fuel storage areas. Failure to follow this warning may cause a fire and explosion, resulting in serious injury or death to personnel.

- Give IMMEDIATE medical attention to personnel exposed to hydrocarbon or toxic vapors. Signs of distress are weakness, nausea, coughing or intoxication, nosebleed or cramps, or other unusual symptoms. Qualified personnel able to administer artificial respiration and simple first aid must be present.

- DO NOT open emergency valve when bottom loading. Automatic shutoff of fuel flow, controlled by jet level sensor, will not function with emergency valve open. Failure to follow this warning will result in uncontrolled fuel spillage and danger of fire and explosion.

- DO NOT mix incompatible fuels in tank. Dangerous fumes and explosion may result. Know what fuel was previously carried so that preventive measures may be taken to ensure that harmful or explosive fumes are not released, Failure to follow this warning may result in serious injury or death to personnel.

- DO NOT perform fuel handling or purging operations in an electrical storm or if a storm is threatening. Keep open flames or other sources of ignition, such as welding and cutting torches and ordinary electrical equipment, away from area where fuel handling or purging operation is in progress. Sufficient fire extinguishers MUST be present and manned. Failure to follow this warning will result in serious injury or death to personnel.

- Should an emergency arise requiring entry into a tank which is not vapor-free, or which has an oxygen content less than 19.5%, personnel entering tank must have an attached lifeline and wear protective respiratory equipment in the form of self-contained breathing apparatus or a full facepiece mask with a pressure supply of breathable air. Another person, also provided with respiratory equipment, MUST be stationed at manhole opening and remain there with full ability to watch personnel inside tank and summon assistance if a rescue operation is needed. Personnel MUST NOT enter a tank which is in the explosive range.

WARNING

FUEL HANDLING AND PURGING (Con't)

- If after purging procedures, semitrailer is left overnight, retest with combustible gas indicator set to ensure a SAFE reading. Tanks may recharge themselves with seepage of undetected pockets of vapors. Failure to follow this warning may result in serious injury or death to personnel.

- Personnel engaged in fuel handling or purging operations must not wear wool, nylon, silk, rayon, or other clothing that generates static electricity. Wear clean cotton clothing with no metal zippers. Remove all contents from pockets. Wear rubber boots and gloves to keep fuel off skin, Use cotton cloths for cleaning purposes. Before climbing onto semitrailer, grasp static ground wire to discharge all static from body.

WARNING

GROUNDING

- Connect bonding and grounding connection before beginning any fuel handling operation, or before performing any unit, direct support, or general support maintenance. Maintain bonding and grounding connection until after all fuel handling or maintenance is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel,

- Walk grounding cables back to reels when stowing grounding cables. DO NOT let go of grounding cables until they are fully wound onto reels. Failure to follow this warning may result in serious injury to personnel.

WARNING

HANDLING HEAVY COMPONENTS

- The following components on semitrailer are heavy and awkward to handle: wheel and drum assembly, pick-up plate, upper coupler assembly, landing gear, spare tire, spare tire carrier, hose and gage stick tube assembly, cabinet, and axle assembly. Use caution, provide adequate support, and use assistance when handling to avoid serious injury to personnel.

- DO NOT perform upper coupler assembly replacement task unless tank is empty and wheels are chocked. If tank is full, landing gear could collapse when front of semitrailer is lowered. Damage to semitrailer or serious injury or death to personnel will result.

WARNING

OPERATION IN COLD

- Extreme cold is hazardous to personnel. Avoid prolonged exposure to cold weather and wear protective clothing and gloves. Avoid touching metal surfaces with bare skin. Pay attention to first signs of frostbite. If exposed skin comes in contact with fuel, frostbite can occur suddenly. If frostbite occurs, immediately seek medical assistance.

WARNING

PREPARATION FOR SHIPMENT

- Explosive vapor level measurements must be taken at specified intervals prior to semitrailer ship and rail movement. Failure to follow this procedure may result in serious injury or death to personnel.

- The M1062 Tank Semitrailer has not been designed for air transportability. Any attempt to transport the semitrailer by air may result in an accident, causing damage to semitrailer or serious injury or death to personnel.

WARNING

REFLECTORS AND DATA PLATES

- DO NOT drill out rivet when replacing a damaged reflector or data plate. Drilling can produce a spark which may cause an explosion and fire. Failure to follow this warning may result in serious injury or death to personnel.

WARNING

STENCILING

- Avoid excessive inhalation of vapors when stenciling. All stenciling procedures must be performed in a well-ventilated area, A fire extinguisher must be on hand. Failure to follow this warning may result in injury to personnel.

- Personnel must wear protective face masks if spraying paint. If face masks are not available, apply paint with brush only. Personnel must stay clear of work area where spray painting is taking place. Failure to follow this warning may result in injury to personnel.

WARNING

WHEELS AND TIRES

- DO NOT remove wheel nuts unless all rim clamps are loose. Removing wheel nuts with rim clamps still tight may cause rim clamps to fly off, causing serious injury to personnel.

- If any wheel stud is damaged and needs replacement, all wheel studs must be replaced. Replacing only the damaged wheel stud and remounting the wheel may result in further damage and injury to personnel.

- Remove and install spare tire to spare tire carrier with extreme caution. Spare tire is heavy. Dropping it could cause serious injury to personnel.

- Carefully follow all tire mounting and dismounting instructions. NEVER dismount a tire unless totally deflated. NEVER mount or use damaged tires or rims. Failure to follow these instructions may result in faulty positioning of tire or rim parts. The assembly could burst with sufficient force to cause serious injury or death to personnel.

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 17 June 1999

TECHNICAL MANUAL

OPERATOR'S, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS FOR TRAILER, TANK, FUEL, 7500 GALLON, M1062 (2330-01-275-7475)

TM 9-2330-384-14&P, dated 9 July 1990, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New, changed, or deleted material is indicated by a vertical bar in the margin of the page or by a deletion notice.
3. Added pages or changed page numbers are indicated by a vertical bar adjacent to the page number.

Remove Pages	*Insert Pages*
i through 1-2	i through 1-2
1-13 and 1-14	1-13 and 1-14
1-17 and 1-18	1-17 and 1-18
2-9 and 2-10	2-9 and 2-10
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4-261 and 4-262	4-261 and 4-262
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B-7 and B-8	B-7 and B-8
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18-1 through Figure 22	18-1 through Figure 22
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G-9 and G-10	G-9 and G-10

(continued)

File this change sheet in front of the publication, for reference purposes.

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Index 3 through Index 6	Index 3 through Index 6
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Sample DA Form 2028-2	Sample DA Form 2028-2
DA Form 2028-2 (three)	DA Form 2028-2 (three)

TECHNICAL MANUAL

TM 9-2330-384-14&P

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Washington, D.C., *9 July 1990*

OPERATOR'S, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS FOR SEMITRAILER, TANK, FUEL, 7500 GALLON, M1062 (2330-01-275-7475)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (*Recommended Changes to Publications and Blank Forms*), or DA Form 2028-2, located in the back of this manual, direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. A reply will be furnished to you.

You may also provide DA Form 2028-2 information to TACOM via datafax or e-mail:
- TACOM's fax number is DSN 793-0726 or (309) 782-0726
- TACOM's e-mail address is amsta-ac-nml@ria-emh2.army.mil

Current as of 4 May 1990

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1-1. SCOPE.

a. This manual describes the operation and unit, direct support, and general support maintenance of the M1062 7500 Gallon Fuel Tank Semitrailer, including repair parts and special tools lists.

b. Throughout the manual, the terms *curbside* and *roadside* are used to describe views of the semitrailer. As viewed from the rear, *curbside* is the right side and *roadside* is the left side.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, *The Army Maintenance Management System (TAMMS).*

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

For destruction of Army materiel to prevent enemy use, refer to TM 750-244-6.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

For information on preparing the M1062 7500 Gallon Fuel Tank Semitrailer for storage or shipment, refer to Chapter 4, Section XVI.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your M1062 7500 Gallon Fuel Tank Semitrailer needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know what you don't like about the design or performance. Put it on an SF Form 368 (*Quality Deficiency Report*). Mail it to us at: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-IM-OPIL, Warren, MI 48397-5000. We will send you a reply.

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1-6. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

a. The M1062 7500 Gallon Fuel Tank Semitrailer is a military adapted commercial semitrailer designed to provide bulk petroleum line haul support over primary and secondary roads.

b. The semitrailer is designed to be towed by the M915/915A1/A2 tractor equipped with a fifth wheel. Maximum allowable speed is 55 mi/h (88 km/h) on primary roads and 35 mi/h (56 km/h) on secondary roads.

c. The semitrailer is capable of occasional hard bottom, salt- or freshwater fording to a depth of 20 in. (50.8 cm) without any special servicing or protection before or after fording.

d. All semitrailers are equipped with:

(1) A single compartment aluminum tank with a capacity of 7500 gallons plus 3% for expansion. The tank is equipped with seven baffles, having offset manways, to minimize fuel surge when in transit or when bottom loading.

(2) A piping assembly containing a roadside front port and a rear inlet. Fuel may be bottom loaded at either opening and unloaded at front port ONLY.

(3) One manhole assembly with one 10 in. (25.4 cm) fill cover used during top loading. One automatic vacuum vent and one automatic pressure/vacuum vent are installed into fill cover. Manhole allows access to tank for inspection and repair.

(4) An automatic shut-off device (jet level sensor) mounted just inside the tank at the manhole opening. When bottom loading, fuel flow will shut off when tank capacity is reached.

(5) A strainer assembly, located in jet level sensor circuit, which filters all fuel being bottom loaded.

(6) A precheck system which operates from cabinet and functions to predict jet level sensor failure.

(7) A vapor collection system allows for venting of vapors created during bottom loading and unloading.

(8) An electrical system which operates under standard or blackout modes and includes:

(a) 12-volt electrical connector. Supplies 12 volts directly to the semitrailer's lights.

(b) 24-volt electrical connector. Supplies 24 volts directly to the blackout lights. With voltage reduction provided by the voltage control unit, supplies 12 volts to the semitrailer lights.

(c) ON/OFF toggle switch for optional convoy warning light (see Appendix D).

(d) Mounting bracket for convoy warning light at rear of roadside overturn rail.

(9) Tandem axles with dual-mounted wheels.

1-6. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES (Con't).

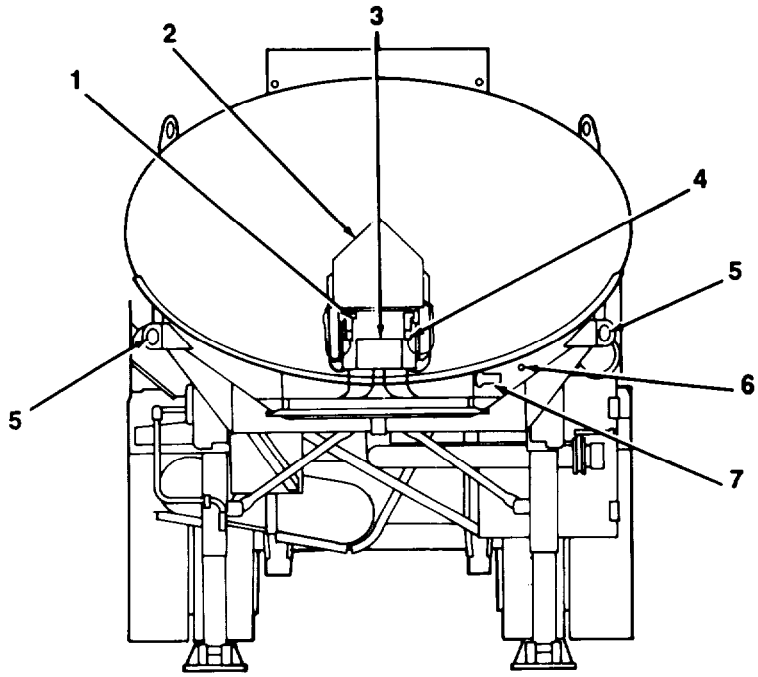
(10) Full air, S-cam automatically adjusted brake components mounted on each axle. Front and rear air reservoirs are mounted to frame brackets and are connected by air hoses to four axle-mounted brake chambers.

(11) A brake interlock system which automatically sets the semitrailer parking/emergency brakes during fuel bottom loading and unloading.

(12) A bolt-on upper coupler assembly.

(13) Landing gear with removable sand shoes. Two-speed operation is controlled by a curbside handcrank.

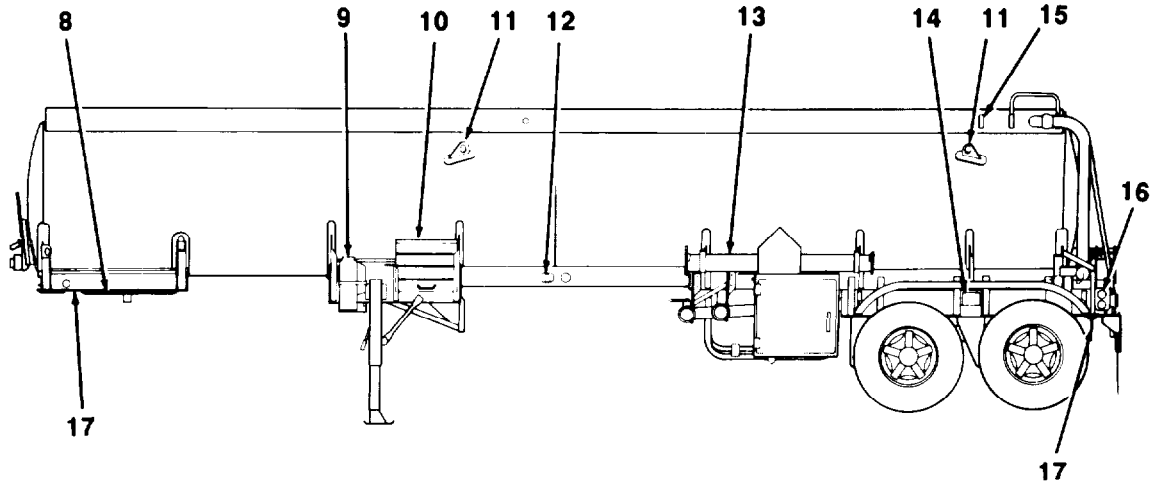
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.



FRONT VIEW

KEY	NAME	FUNCTION
1	Air Couplings	EMERGENCY air coupling (roadside) and SERVICE air coupling (curbside) connect to tractor EMERGENCY and SERVICE air supply.
2	Placard Bracket	Provides a means to display fuel warning and fuel identification number. Located also at roadside, rear, and curbside of semitrailer.
3	Voltage Control Unit	Contains 12-volt and 24-volt receptacles. Regulates and directs power flow to semitrailer lights.
4	Dummy Couplings	Protect EMERGENCY and SERVICE air couplings from dust and damage.
5	Front Clearance and Marker Lights	Mark front of semitrailer.
6	Grounding Stud	Unpainted ball used to attach grounding cables. Located also at rear, top, and sides of semitrailer.
7	Emergency Valve Remote Trip-Release	Closes emergency valve from front of semitrailer.

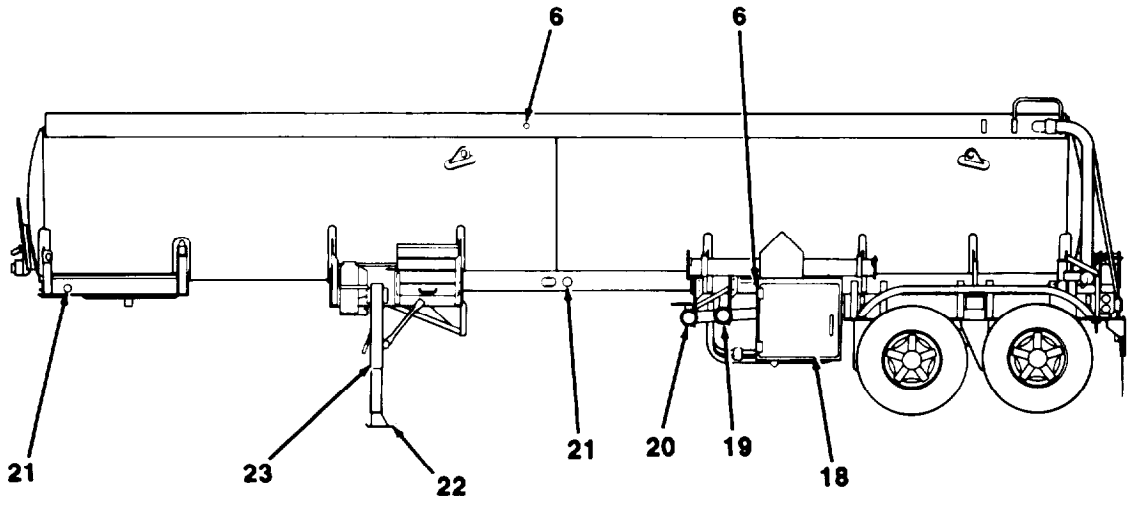
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



ROADSIDE VIEW

KEY	NAME	FUNCTION
8	Upper Coupler Assembly	Used to couple semitrailer to tractor.
9	Fire Extinguishers	Portable fire protection. Located on each side of semitrailer.
10	Ground Boards	Placed under landing gear sand shoes in sandy or muddy terrain.
11	Lift Points	Allow lifting of empty semitrailer. Located on each side of semitrailer.
12	Side Clearance and Marker Light	Marks midline of semitrailer. Located on each side of semitrailer.
13	Ground Rod Tube Assembly	Stowage for ground rod. Tube may be locked at both ends.
14	Chock Block	Must be used in an emergency when parking/emergency brakes are not functioning. Used to prevent semitrailer from rolling when coupling, uncoupling, storing, or parking.
15	Convoy Warning Light Mounting Bracket	Used to mount optional convoy warning light assembly.
16	Rear Side Clearance and Marker Light and Reflector Assembly	Marks rear of semitrailer. Located on each side of semitrailer.
17	Tie-downs	Located at upper coupler assembly and under bumper. Allow tie-down of empty semitrailer.

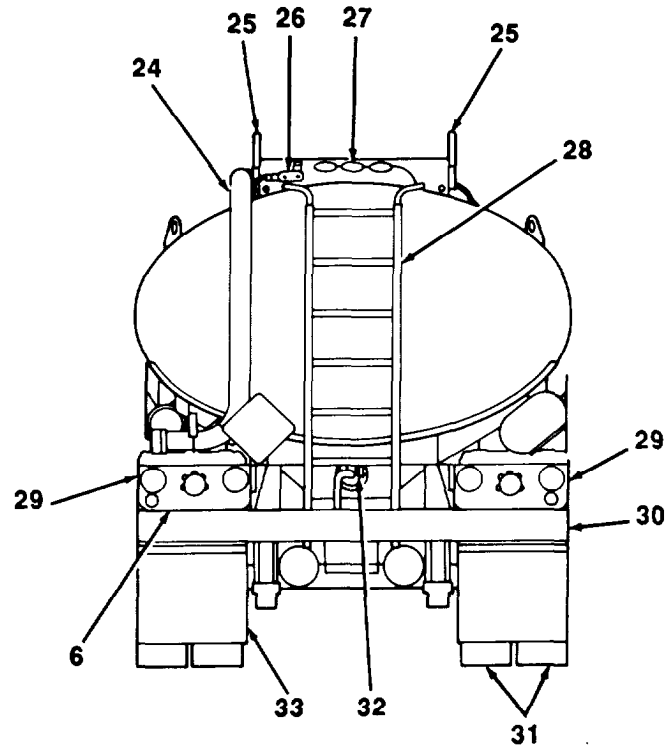
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



ROADSIDE VIEW (Continued)

KEY	NAME	FUNCTION
18	Cabinet	Contains emergency valve and vapor vent control levers, precheck controls, grounding reels, transfer hose reducers, and Basic Issue Items (BII).
19	Piping Assembly Rear Inlet	Opening used to bottom load fuel.
20	Piping Assembly Front Port	Opening used to bottom load or unload fuel.
21	Reflectors	Mark outline of semitrailer. Located on each side of semitrailer.
22	Sand Shoes	Swivel pads allow for leveling of uncoupled semitrailer.
23	Landing Gear	Used to support semitrailer when uncoupled from tractor.
6	Grounding Stud	Unpainted ball used to attach grounding cable.

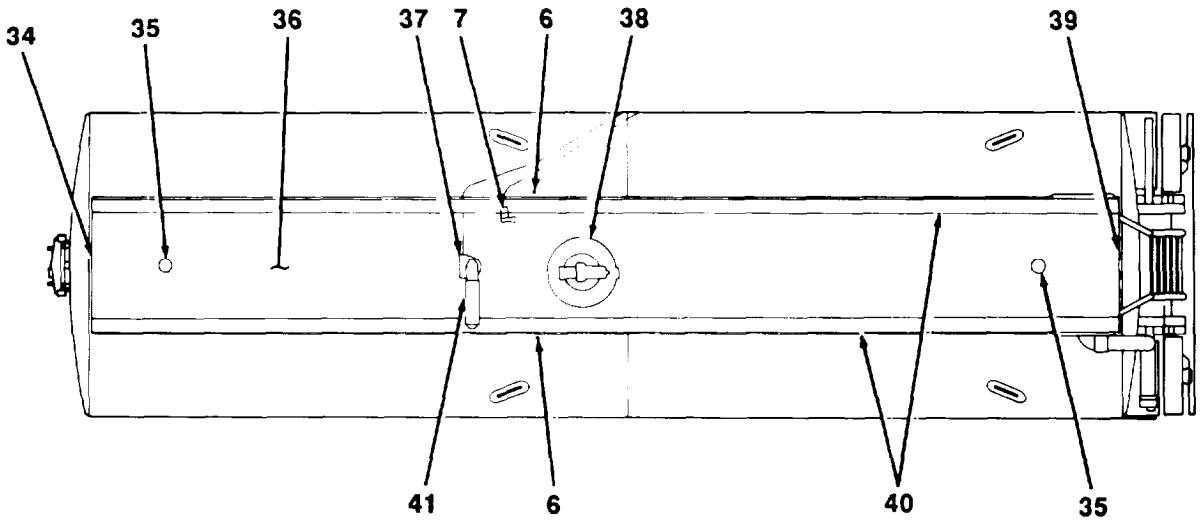
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



REAR VIEW

KEY	NAME	FUNCTION
24	Vapor Return Line	Allows safe venting of vapors when bottom loading or unloading fuel.
25	Grabhandles	Offer a handhold for personnel climbing onto top of semitrailer.
26	Convoy Warning Light Condulet	Housing for female receptacle into which convoy warning light is plugged when light is in use. Cap is provided to cover receptacle when not in use.
27	Triple Clearance Light Assembly	Marks top of semitrailer.
28	Ladder	Provides access to top of semitrailer and a means to drain top of semitrailer in event of fuel spillage.
29	Light Box Installation	Contains stop/taillights, turn signal/taillights, reflectors, and blackout lights.
30	Bumper	Protects rear of semitrailer from damage.
31	Dual Wheels	Two wheels at end of each axle support semitrailer load.
32	Sump Drain Control Lever	Allows complete drainage of fuel from tank sump and elimination of condensation and other contamination.
33	Splashguards	Protect semitrailer, and vehicles traveling behind, from thrown dirt or stones.
6	Grounding Stud	Unpainted ball used to attach grounding cable.

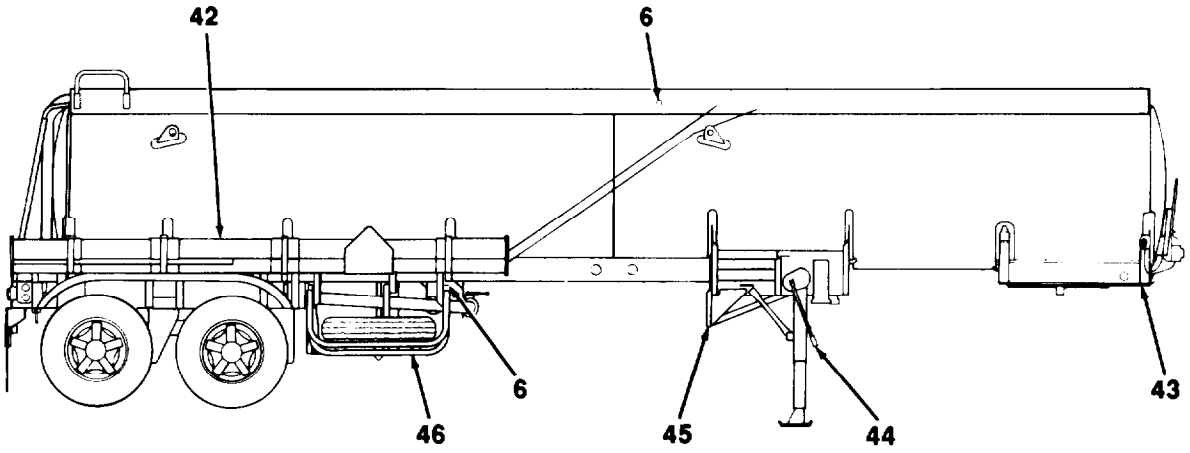
1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



TOP VIEW

KEY	NAME	FUNCTION
34	Front Dam	Contains fuel in event of fuel spillage.
35	Vent Cap	Access port for cleaning tank interior. In the event of fire, fusible cap melts to provide tank venting.
36	Walkway	Nonskid surface on top of semitrailer.
37	Vapor Vent	Valve opens to allow venting of vapors created during bottom loading and unloading.
38	Manhole	Allows access to inside of tank. Fuel is top loaded through 10 in. (25.4 cm) fill cover. Closure is by means of self-latching catches.
39	Rear Dam	Contains fuel in event of fuel spillage.
40	Overturn Rails	Protect manhole and vapor vent from damage in case of an overturn accident. Also help contain fuel spillage. Roadside overturn rail is part of vapor collection system.
41	Vapor Vent Hose	Provides airtight connection between vapor vent and roadside overturn rail.
6	Grounding Stud	Unpainted ball used to attach grounding cable.
7	Emergency Valve Remote Trip-Release	Closes emergency valve from top of semitrailer.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Con't).



CURBSIDE VIEW

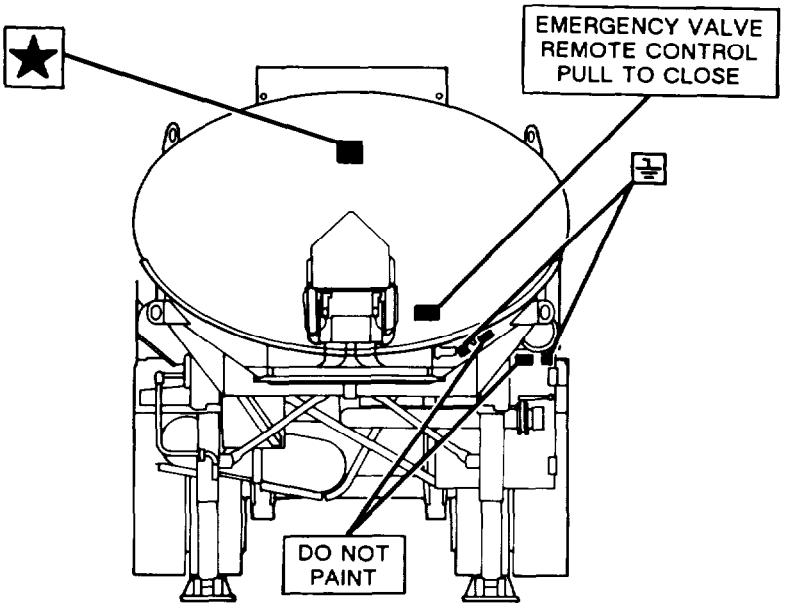
KEY	NAME	FUNCTION
42	Hose/Gage Stick Tube Assembly	Stowage for transfer hoses and gage stick. Tube may be locked at both ends.
43	Pick-up Plate	Acts as a skid plate when coupling semitrailer to tractor's fifth wheel.
44	Handcrank	Operates retractable landing gear legs.
45	Decontamination Kit Mounting	Support bracket for M13 decontamination kit.
46	Spare Tire Carrier	Provides stowage for spare tire.
6	Grounding Stud	Unpainted ball used to attach grounding cable

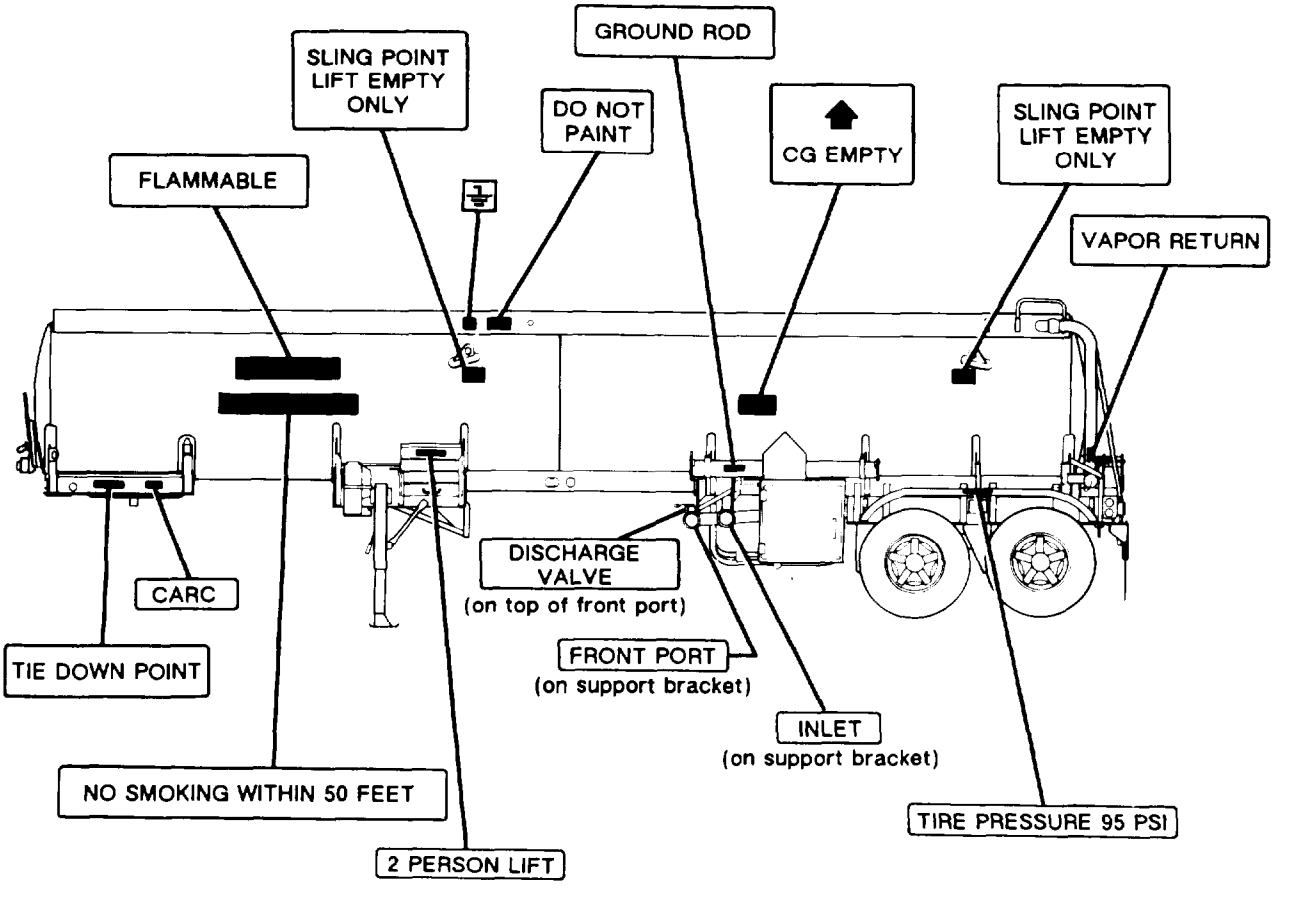
1-8. LOCATION AND CONTENTS OF STENCIL MARKINGS.

a. The following illustrations show the location and contents of all semitrailer stencil markings.

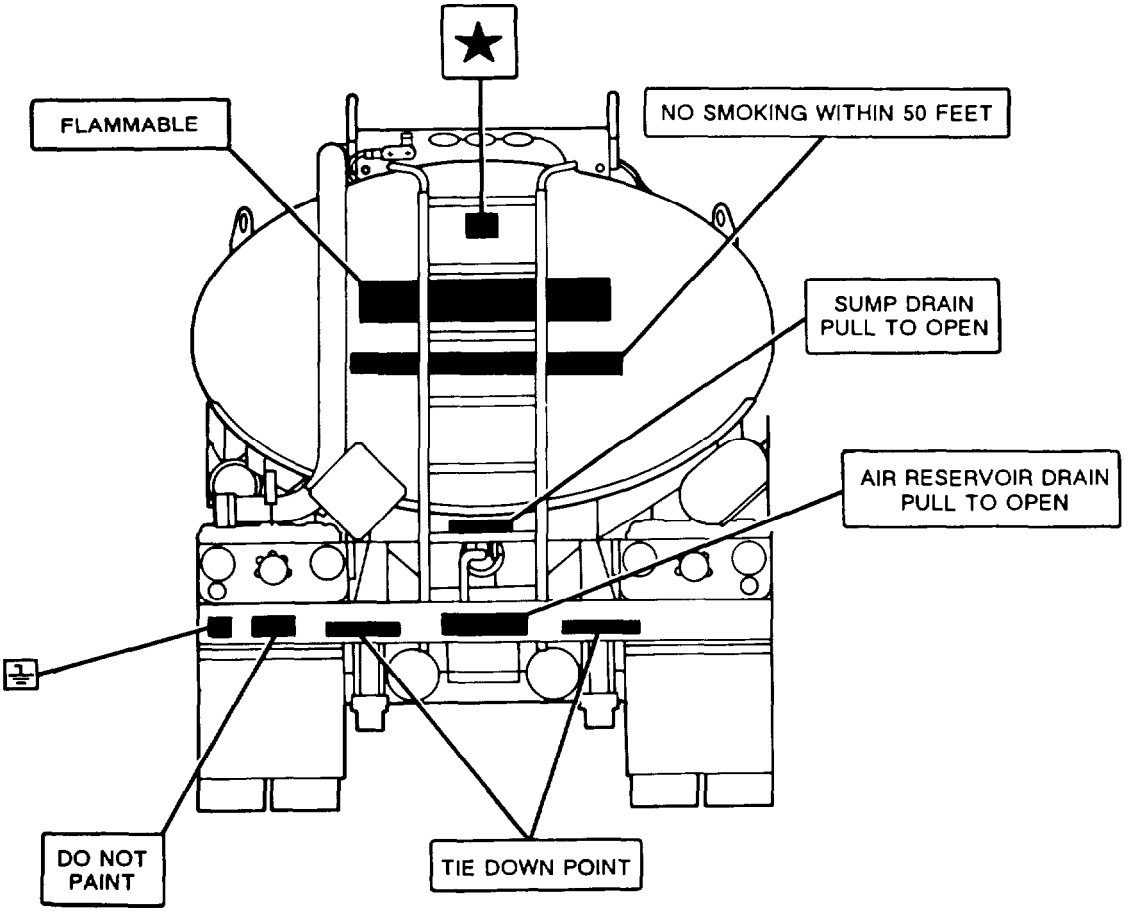
b. Maintain all stencil markings so that the information remains legible. If any stencil marking is no longer legible, notify unit maintenance.

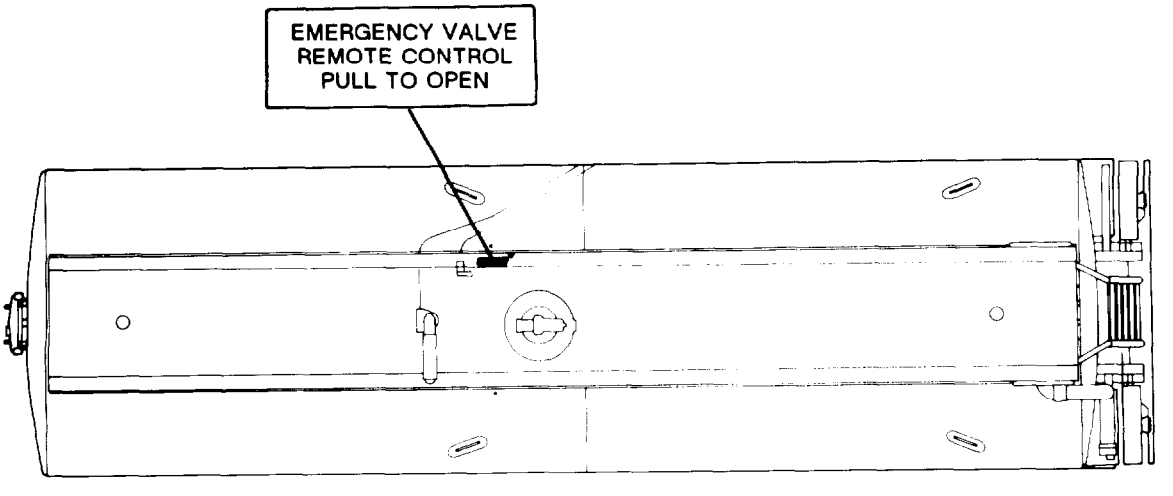
1-8. LOCATION AND CONTENTS OF STENCIL MARKINGS (Con't).



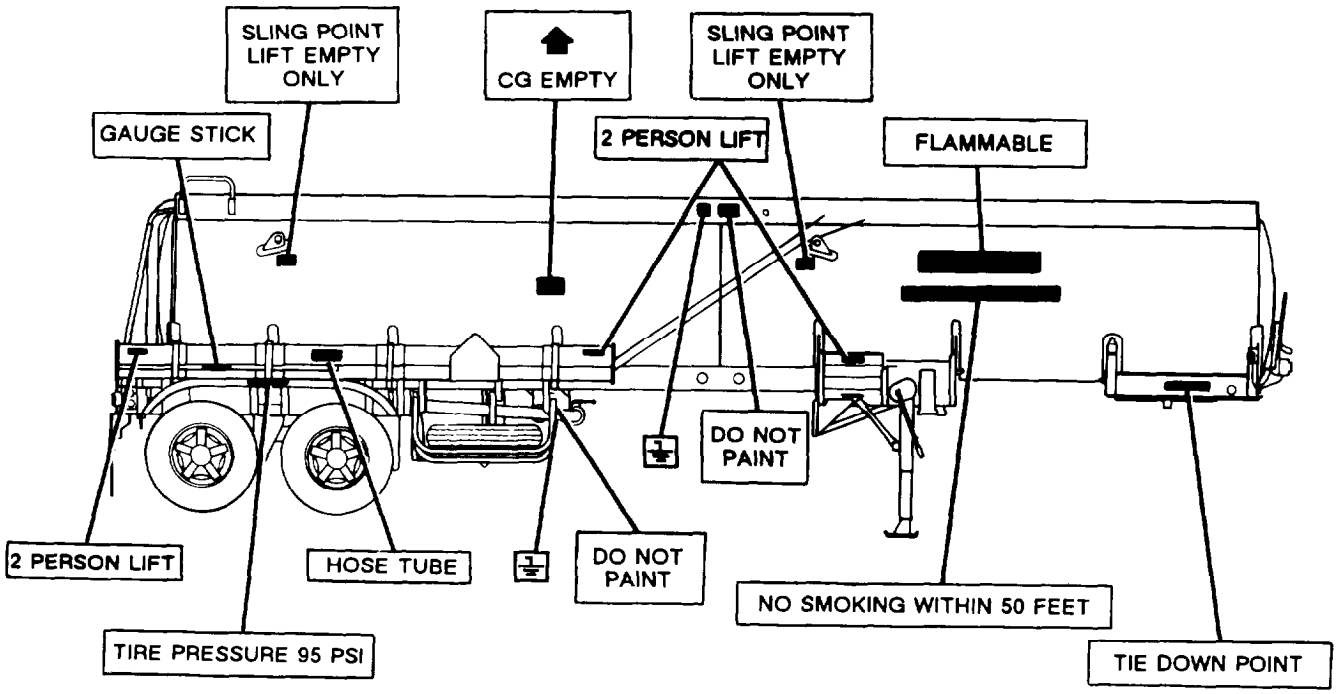


1-8. LOCATION AND CONTENTS OF STENCIL MARKINGS (Con't).





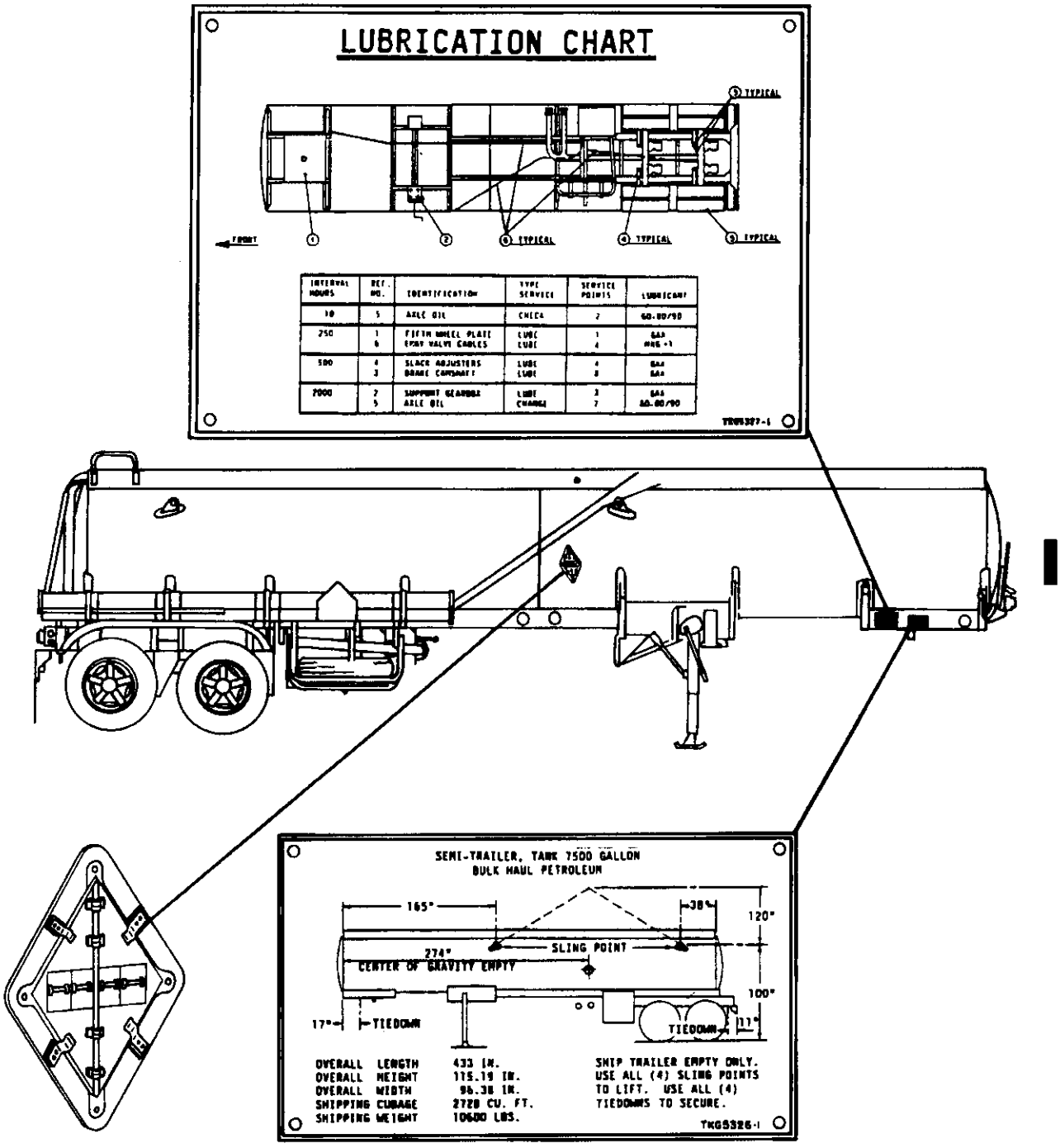
1-8. LOCATION AND CONTENTS OF STENCIL MARKINGS (Con't).



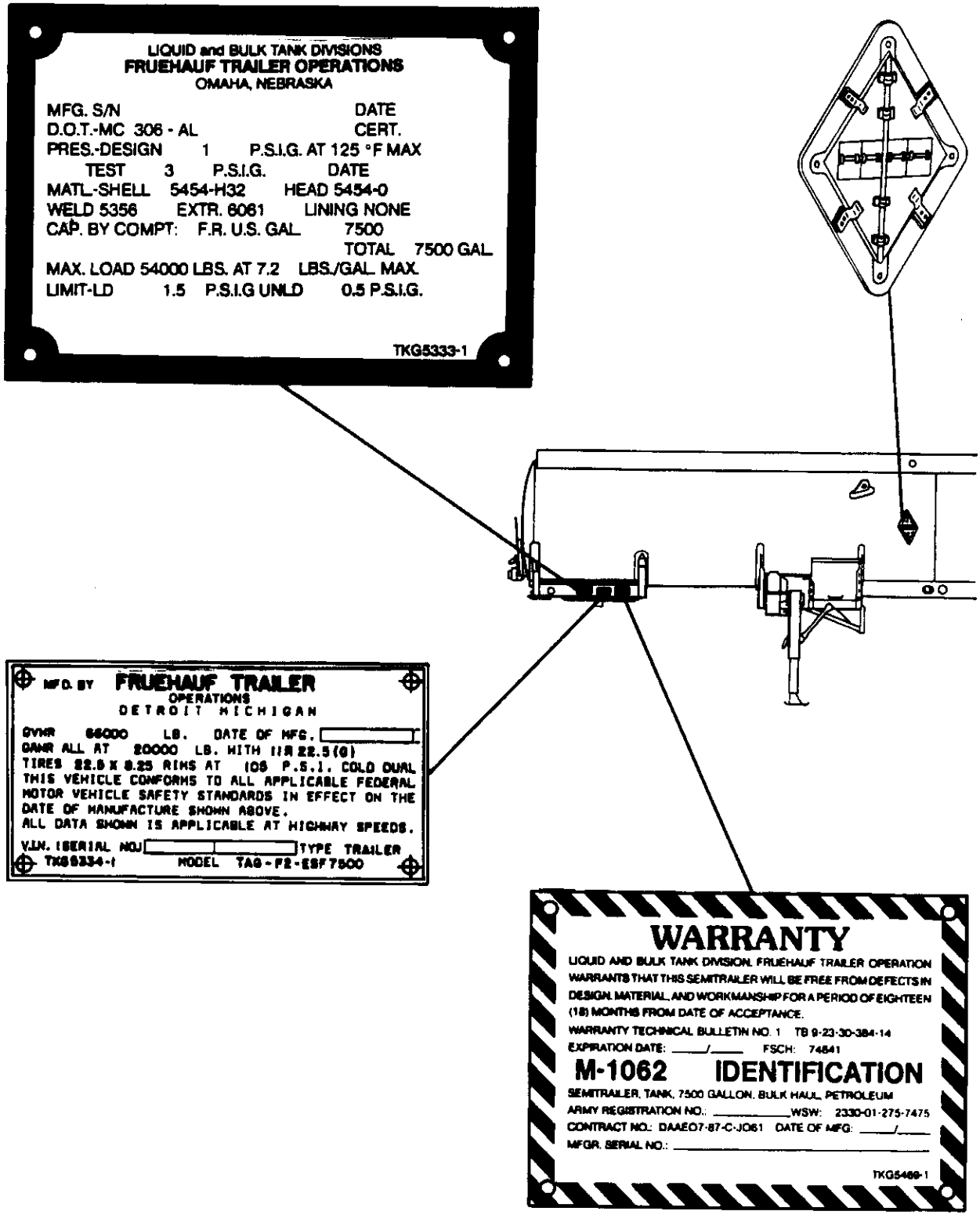
1-9. LOCATION AND CONTENTS OF PLATES.

a. The following illustrations show the location and contents of all semitrailer plates.

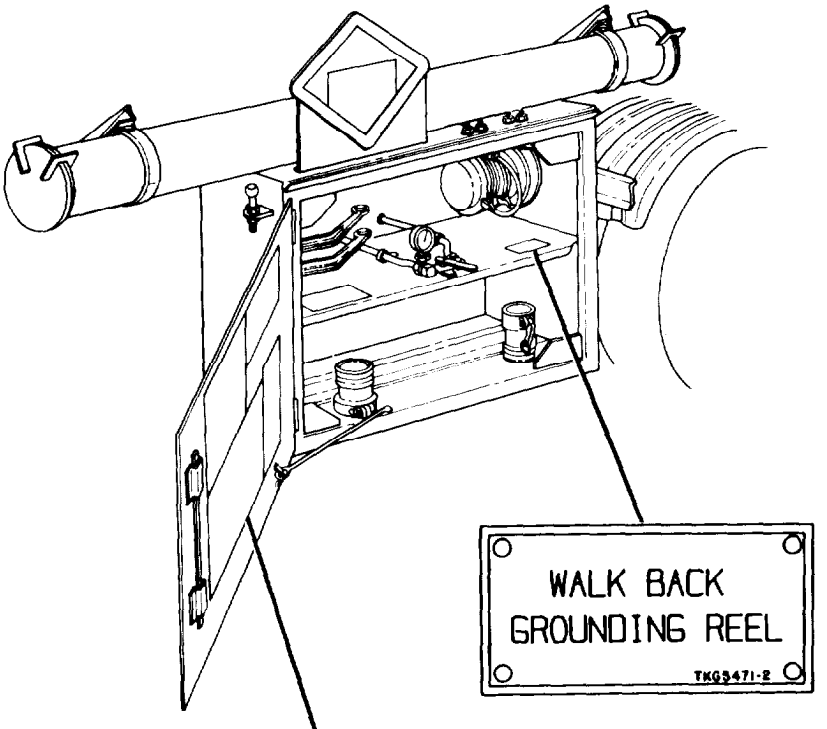
b. Maintain all plates so that all information remains legible. If any plate is missing or no longer legible, notify unit maintenance.



1-9. LOCATION AND CONTENTS OF PLATES (Con't).


LIQUID and BULK TANK DIVISIONS
FRUEHAUF TRAILER OPERATIONS
OMAHA, NEBRASKA
MFG. S/N
DATE
D.O.T.-MC 306 - AL
CERT.
PRES.-DESIGN 1 P.S.I.G. AT 125 °F MAX
TEST 3 P.S.I.G. DATE
MATL.-SHELL 5454-H32 HEAD 5454-0
WELD 5356 EXTR. 6061 LINING NONE
CAP. BY COMPT: F.R. U.S. GAL. 7500
TOTAL 7500 GAL.
MAX. LOAD 54000 LBS. AT 7.2 LBS./GAL. MAX.
LIMIT-LD 1.5 P.S.I.G UNLD 0.5 P.S.I.G.
TKG5333-1
MFD. BY FRUEHAUF TRAILER
OPERATIONS
DETROIT MICHIGAN
GVWR 66000 LB. DATE OF MFG.
GAWR ALL AT 20000 LB. WITH 11R 22.5(G)
TIRES 22.5 X 8.25 RIMS AT 105 P.S.I. COLD DUAL
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
ALL DATA SHOWN IS APPLICABLE AT HIGHWAY SPEEDS.
V.I.N. (SERIAL NO.)
TYPE TRAILER
TKG5334-1
MODEL TAG-F2-ESF7500
WARRANTY
LIQUID AND BULK TANK DIVISION, FRUEHAUF TRAILER OPERATION WARRANTS THAT THIS SEMITRAILER WILL BE FREE FROM DEFECTS IN DESIGN, MATERIAL, AND WORKMANSHIP FOR A PERIOD OF EIGHTEEN (18) MONTHS FROM DATE OF ACCEPTANCE.
WARRANTY TECHNICAL BULLETIN NO. 1 TB 9-23-30-384-14
EXPIRATION DATE: ____/____ FSCH: 74841
M-1062 IDENTIFICATION
SEMITRAILER, TANK, 7500 GALLON, BULK HAUL, PETROLEUM
ARMY REGISTRATION NO.: _____ WSW: 2330-01-275-7475
CONTRACT NO.: DAAE07-87-C-J061 DATE OF MFG: ____/____
MFGR. SERIAL NO.: _____
TKG5469-1

1-9. LOCATION AND CONTENTS OF PLATES (Con't).



OPERATING INSTRUCTIONS

WARNING FAILURE TO READ AND FOLLOW THESE INSTRUCTIONS PRECISELY COULD RESULT IN INJURY OR DEATH TO PERSONNEL. READ THE SEMITRAILER TECHNICAL MANUAL (TM 9-2330-384-14&P) FOR ADDITIONAL INFORMATION.

WARNING SECURELY GROUND THE SEMITRAILER TO A SUFFICIENT EARTH GROUND BEFORE BEGINNING ANY FUEL HANDLING OPERATIONS. USE THE SEMITRAILER GROUND ROD AND GROUND CABLES IF NECESSARY. MAINTAIN THE GROUND CONTINUOUSLY UNTIL AFTER ALL FUEL HANDLING OPERATIONS ARE COMPLETED.

WARNING DO NOT CONNECT THE SEMITRAILER GROUNDING CABLES TO A SEMITRAILER GROUNDING STUD.

WARNING STOP ALL FUEL HANDLING OPERATIONS IMMEDIATELY AT THE FIRST SIGN OF ANY LEAKS OR MALFUNCTIONS.

WARNING IN CASE OF EMERGENCY, CLOSE THE EMERGENCY VALVE BY:

1. PUSHING THE EMERGENCY VALVE OPERATOR HANDLE.
2. PULLING THE REMOTE CONTROL AT THE FRONT ROADSIDE OF THE SEMITRAILER.
3. PULLING THE REMOTE CONTROL AHEAD OF THE MANHOLE ON TOP OF THE SEMITRAILER.
4. CLOSING THE CABINET DOOR.

WARNING DO NOT MIX INCOMPATIBLE FUELS. KNOW WHAT PRODUCT WAS PREVIOUSLY CARRIED SO THAT INJURIOUS OR EXPLOSIVE VAPORS ARE NOT CREATED OR RELEASED. DO NOT INHALE VAPORS THAT MAY BE RELEASED FROM THE SEMITRAILER.

WARNING TOP LOADING AT THE MANHOLE FILL LID WILL RELEASE VAPORS. DO NOT TOP LOAD IF INJURIOUS VAPORS WILL BE RELEASED.

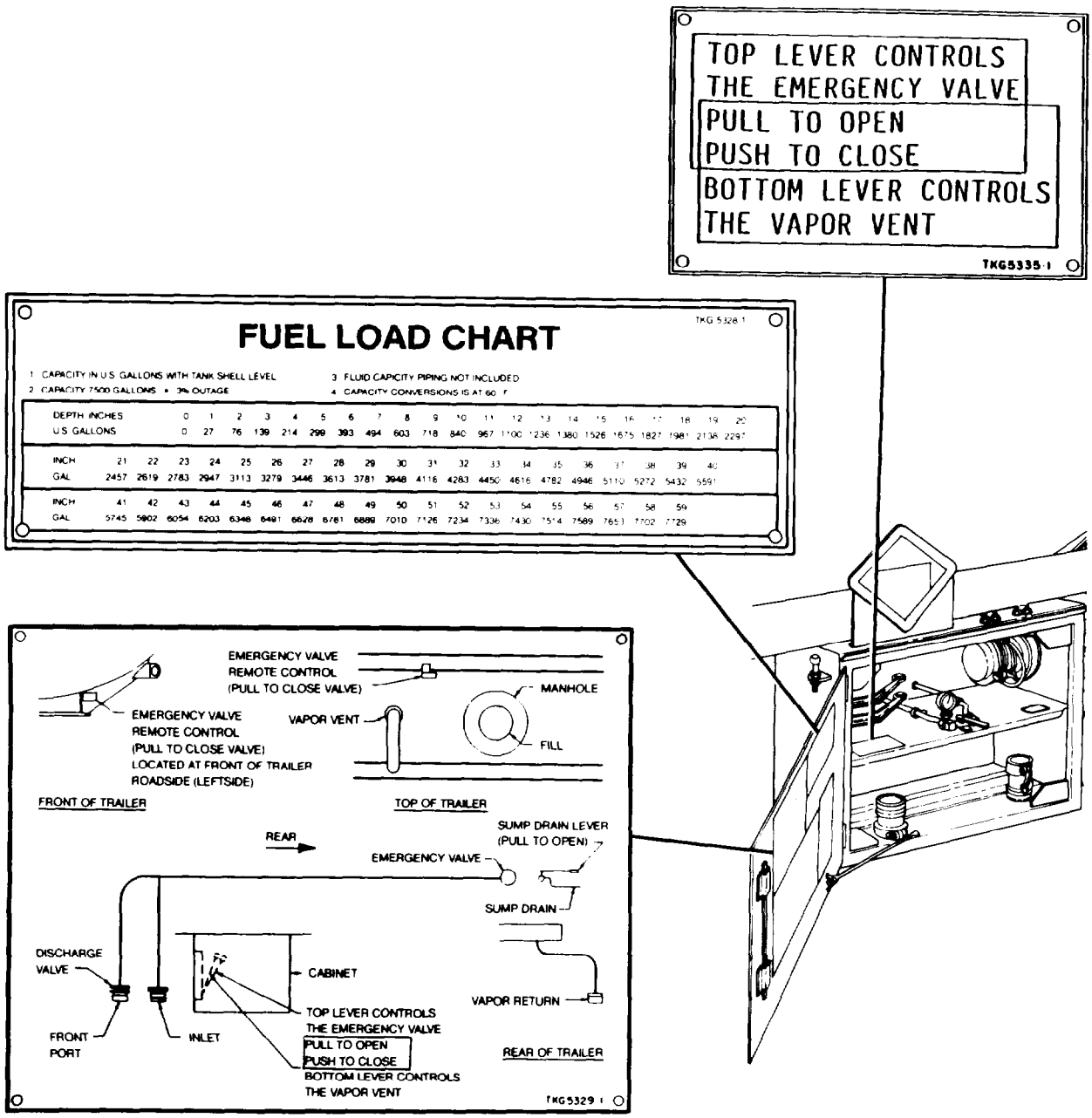
CAUTION THE VAPOR VENT AND VAPOR RETURN LINE MUST BE OPEN WHILE EITHER LOADING OR UNLOADING FUEL.

CAUTION DO NOT OPEN THE EMERGENCY VALVE WHILE LOADING FUEL.

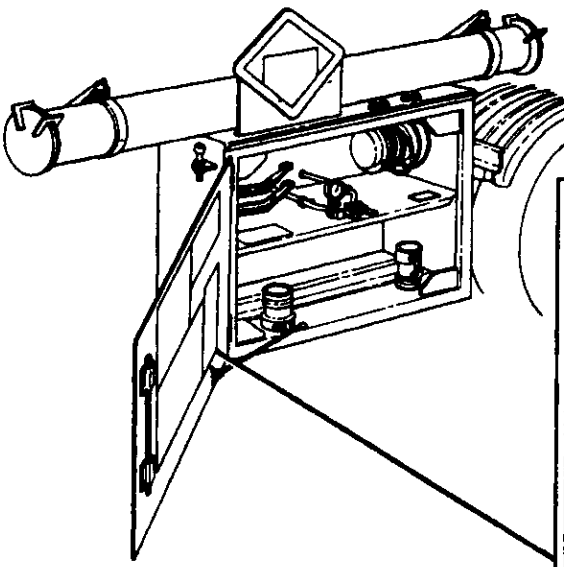
1. TO DISCHARGE FUEL AT THE FRONT PORT:
   - A. GROUND THE SEMITRAILER TO A SUFFICIENT EARTH GROUND.
   - B. CONNECT THE VAPOR RECOVERY HOSE AT THE REAR ROADSIDE FITTING (4 IN CAMLOCK FITTING).
   - C. CONNECT THE DELIVERY HOSE(S) TO THE FRONT PORT (4 IN CAMLOCK FITTING).
   - D. PULL BOTH OPERATOR LEVERS IN THE CABINET TO OPEN THE EMERGENCY VALVE AND THE VAPOR VENT.
   - E. OPEN THE DISCHARGE VALVE TO UNLOAD FUEL.
   - F. WHEN UNLOADING IS COMPLETE, PUSH BOTH OPERATOR LEVERS TO CLOSE THE EMERGENCY VALVE AND VAPOR VENT.
   - G. AFTER ALLOWING THE PIPING TO DRAIN, CLOSE THE DISCHARGE VALVE.
   - H. DISCONNECT AND STOW THE HOSE(S). DO NOT DISCONNECT THE DELIVERY HOSE(S) UNTIL EMPTY.
   - J. DISCONNECT AND STOW THE GROUND.
2. TO BOTTOM LOAD FUEL AT THE FRONT PORT OR INLET:
   - A. GROUND THE SEMITRAILER TO A SUFFICIENT EARTH GROUND.
   - B. CONNECT THE VAPOR RECOVERY HOSE AT THE REAR ROADSIDE FITTING (4 IN CAMLOCK FITTING).
   - C. CONNECT THE DELIVERY HOSE(S). ATTACH AT THE FRONT PORT WHEN USING A HOSE WITH A 4 IN CAMLOCK FITTING. ATTACH AT THE INLET WHEN USING A HOSE WITH A 2-1/2 IN BOYONET FITTING.
   - D. PULL THE VAPOR VENT OPERATOR LEVER IN THE CABINET TO OPEN THE VENT. DO NOT PULL THE EMERGENCY VALVE OPERATOR LEVER.
   - E. IF BOTTOM LOADING THROUGH THE FRONT PORT, OPEN THE DISCHARGE VALVE.
   - F. LOAD THE REQUIRED AMOUNT OF FUEL. THE EMERGENCY VALVE WILL AUTOMATICALLY OPEN DURING LOADING AND CLOSE WHEN THE SEMITRAILER IS FULL.
   - G. WHEN LOADING IS COMPLETE, SHUT DOWN IN REVERSE ORDER. DO NOT DISCONNECT THE DELIVERY HOSE(S) UNTIL EMPTY.
3. TO TOP LOAD FUEL AT THE MANHOLE:
   - A. GROUND THE SEMITRAILER TO A SUFFICIENT EARTH GROUND.
   - B. OPEN THE VAPOR RECOVERY LINE AT THE REAR ROADSIDE. PULL THE VAPOR VENT OPERATOR LEVER IN THE CABINET. ALLOW ANY INTERNAL PRESSURE WITHIN THE SEMITRAILER TO ESCAPE BEFORE OPENING THE FILL LID IN THE MANHOLE.
   - C. OPEN THE FILL LID IN THE MANHOLE SLOWLY TO ALLOW ANY ADDITIONAL VAPORS TO ESCAPE.
   - D. PLACE THE FILL PIPE OR HOSE IN THE FILL OPENING. TAKE CARE NOT TO DAMAGE THE CAPACITY INDICATOR.
   - E. WATCH THE CAPACITY INDICATOR THROUGH THE FILL LID WHILE LOADING. DO NOT OVERFILL THE SEMITRAILER.
   - F. WHEN LOADING IS COMPLETE, SHUT DOWN IN REVERSE ORDER.

TKG 5330-1

1-9. LOCATION AND CONTENTS OF PLATES (Con't).

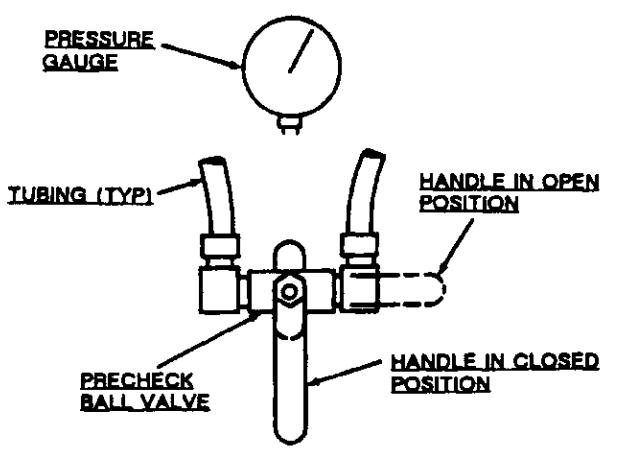

TOP LEVER CONTROLS
THE EMERGENCY VALVE
PULL TO OPEN
PUSH TO CLOSE
BOTTOM LEVER CONTROLS
THE VAPOR VENT
TKG5335-1
FUEL LOAD CHART
TKG 5328-1
1 CAPACITY IN U.S. GALLONS WITH TANK SHELL LEVEL
2 CAPACITY 7500 GALLONS + 3% OUTAGE
3 FLUID CAPICITY PIPING NOT INCLUDED
4 CAPACITY CONVERSIONS IS AT 60 F
DEPTH INCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
U.S GALLONS 0 27 76 139 214 299 393 494 603 718 840 967 1100 1236 1380 1526 1675 1827 1981 2138 2297
INCH 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
GAL 2457 2619 2783 2947 3113 3279 3446 3613 3781 3948 4116 4283 4450 4616 4782 4948 5110 5272 5432 5591
INCH 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
GAL 5745 5802 6054 6203 6348 6491 6628 6761 6889 7010 7126 7234 7336 7430 7514 7589 7653 7702 7729
EMERGENCY VALVE
REMOTE CONTROL
(PULL TO CLOSE VALVE)
MANHOLE
VAPOR VENT
FILL
EMERGENCY VALVE
REMOTE CONTROL
(PULL TO CLOSE VALVE)
LOCATED AT FRONT OF TRAILER
ROADSIDE (LEFTSIDE)
FRONT OF TRAILER
TOP OF TRAILER
REAR
SUMP DRAIN LEVER
(PULL TO OPEN)
EMERGENCY VALVE
SUMP DRAIN
DISCHARGE
VALVE
CABINET
VAPOR RETURN
TOP LEVER CONTROLS
THE EMERGENCY VALVE
PULL TO OPEN
PUSH TO CLOSE
BOTTOM LEVER CONTROLS
THE VAPOR VENT
FRONT
PORT
INLET
REAR OF TRAILER
TKG5329-1

1-9. LOCATION AND CONTENTS OF PLATES (Con't).



OVERFLOW SENSOR PRECHECK

1. READ THE SEMITRAILER TECHNICAL MANUAL (TM 9-2330-384-14&P) BEFORE ATTEMPTING TO USE THE PRECHECK.
2. WHILE BOTTOM LOADING THE TANK OBSERVE PRESSURE GAUGE READING, AND THEN OPEN THE PRECHECK BALL VALVE.
3. THE OVERFLOW SENSOR IS OPERATING PROPERLY, IF THE EMERGENCY VALVE CLOSES WITHIN 2 MINUTES AFTER THE PRECHECK VALVE IS OPENED. THIS WILL STOP THE FLOW OF FUEL INTO THE TANK, AS INDICATED BY A SUDDEN INCREASE IN THE PRESSURE GAUGE READING. TO RESUME LOADING, CLOSE THE PRECHECK BALL VALVE.
4. IF THE EMERGENCY VALVE DOES NOT CLOSE WITHIN 2 MINUTES, STOP LOADING FUEL AND CONSULT THE SEMITRAILER TECHNICAL MANUAL TROUBLESHOOTING INSTRUCTIONS.

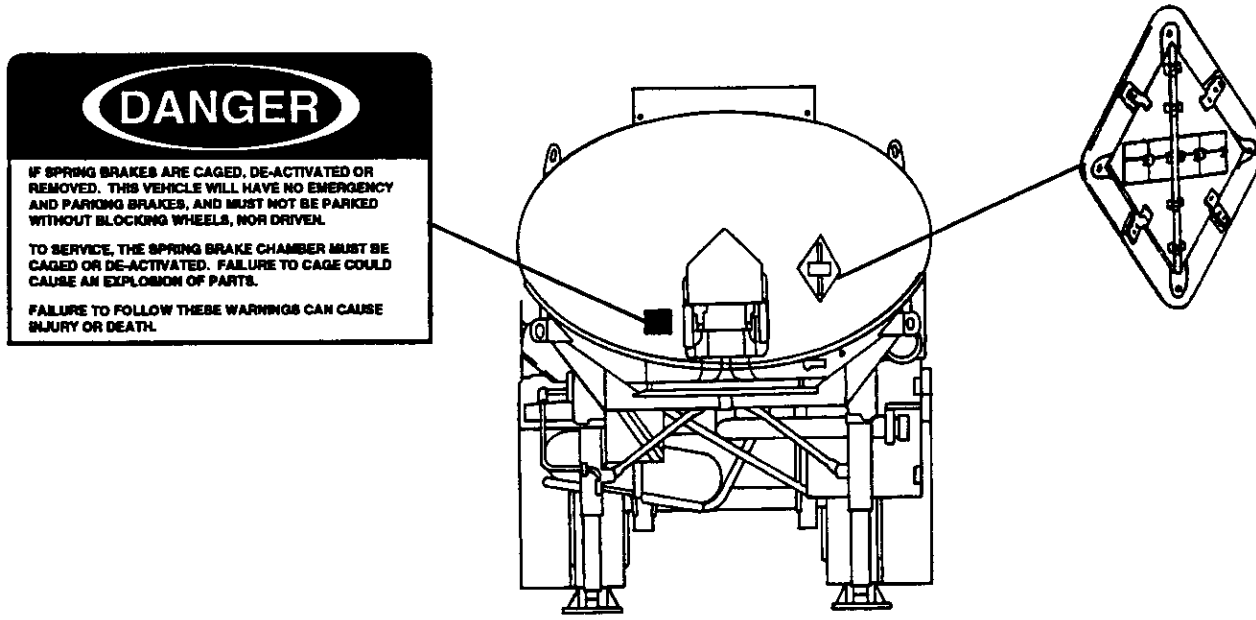


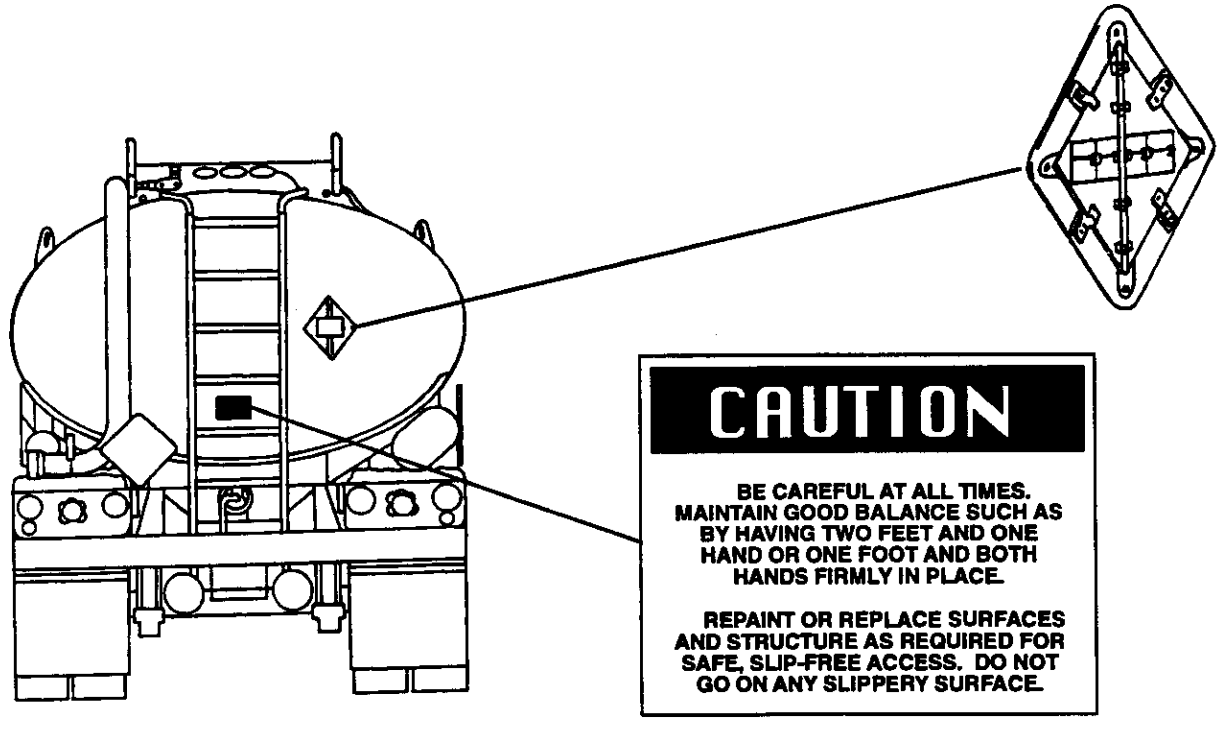
TKG5560-1

1-10. LOCATION AND CONTENTS OF DECALS.

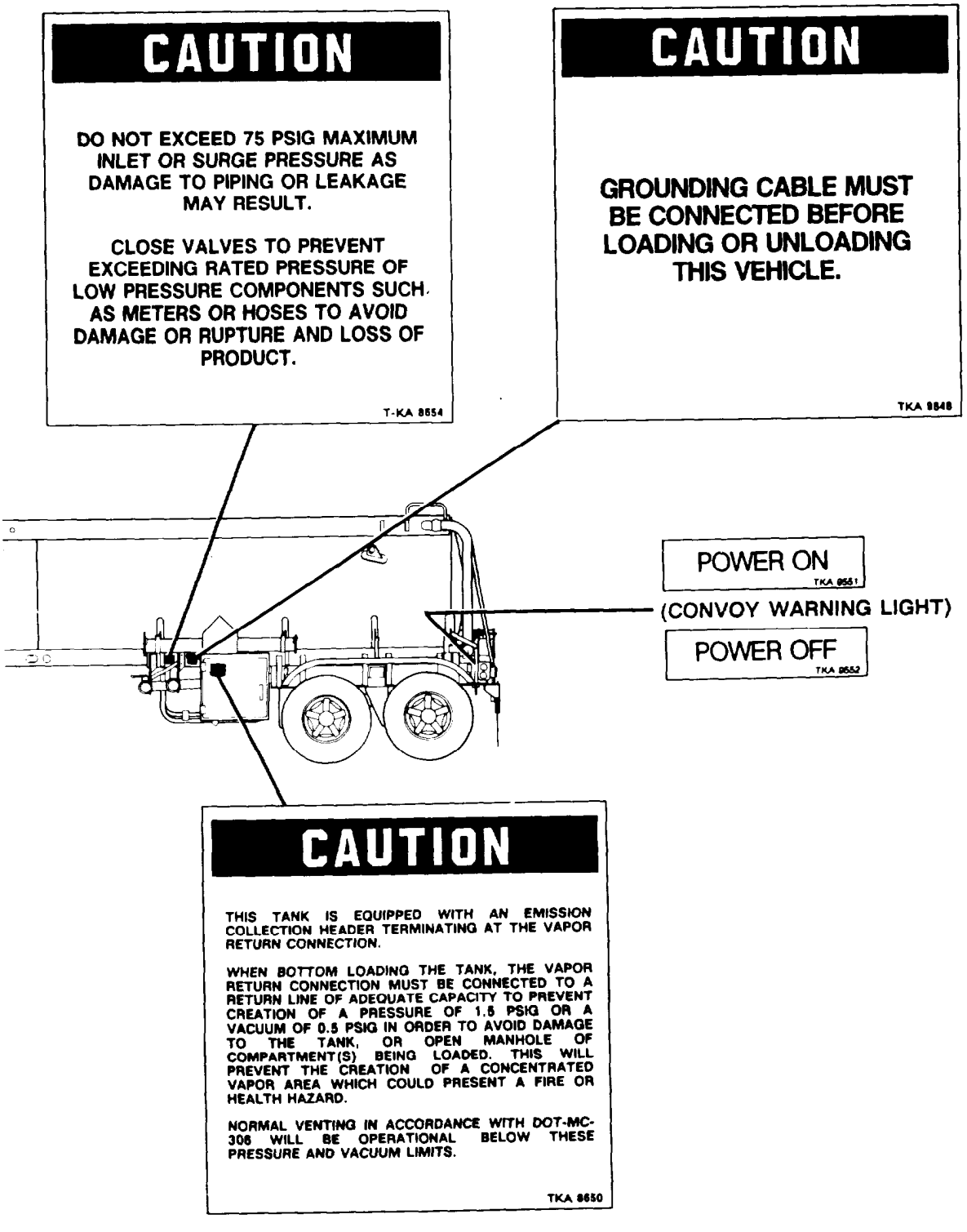
a. The following illustrations show the location and contents of all semitrailer decals.

b. Maintain all decals so that all information remains legible. If any decal is missing or no longer legible, notify unit maintenance.


DANGER
IF SPRING BRAKES ARE CAGED, DE-ACTIVATED OR REMOVED, THIS VEHICLE WILL HAVE NO EMERGENCY AND PARKING BRAKES, AND MUST NOT BE PARKED WITHOUT BLOCKING WHEELS, NOR DRIVEN.
TO SERVICE, THE SPRING BRAKE CHAMBER MUST BE CAGED OR DE-ACTIVATED. FAILURE TO CAGE COULD CAUSE AN EXPLOSION OF PARTS.
FAILURE TO FOLLOW THESE WARNINGS CAN CAUSE INJURY OR DEATH.


CAUTION
BE CAREFUL AT ALL TIMES. MAINTAIN GOOD BALANCE SUCH AS BY HAVING TWO FEET AND ONE HAND OR ONE FOOT AND BOTH HANDS FIRMLY IN PLACE.
REPAINT OR REPLACE SURFACES AND STRUCTURE AS REQUIRED FOR SAFE, SLIP-FREE ACCESS. DO NOT GO ON ANY SLIPPERY SURFACE.

1-10. LOCATION AND CONTENTS OF DECALS (Con't).


CAUTION
DO NOT EXCEED 75 PSIG MAXIMUM INLET OR SURGE PRESSURE AS DAMAGE TO PIPING OR LEAKAGE MAY RESULT.
CLOSE VALVES TO PREVENT EXCEEDING RATED PRESSURE OF LOW PRESSURE COMPONENTS SUCH AS METERS OR HOSES TO AVOID DAMAGE OR RUPTURE AND LOSS OF PRODUCT.
T-KA 8654
CAUTION
GROUNDING CABLE MUST BE CONNECTED BEFORE LOADING OR UNLOADING THIS VEHICLE.
TKA 8648
POWER ON
TKA 8651
(CONVOY WARNING LIGHT)
POWER OFF
TKA 8652
CAUTION
THIS TANK IS EQUIPPED WITH AN EMISSION COLLECTION HEADER TERMINATING AT THE VAPOR RETURN CONNECTION.
WHEN BOTTOM LOADING THE TANK, THE VAPOR RETURN CONNECTION MUST BE CONNECTED TO A RETURN LINE OF ADEQUATE CAPACITY TO PREVENT CREATION OF A PRESSURE OF 1.5 PSIG OR A VACUUM OF 0.5 PSIG IN ORDER TO AVOID DAMAGE TO THE TANK, OR OPEN MANHOLE OF COMPARTMENT(S) BEING LOADED. THIS WILL PREVENT THE CREATION OF A CONCENTRATED VAPOR AREA WHICH COULD PRESENT A FIRE OR HEALTH HAZARD.
NORMAL VENTING IN ACCORDANCE WITH DOT-MC-306 WILL BE OPERATIONAL BELOW THESE PRESSURE AND VACUUM LIMITS.
TKA 8650

1-10. LOCATION AND CONTENTS OF DECALS (Con't).

CAUTION

WHEN STEAM CLEANING, KEEP MANHOLE OPEN UNTIL TANK HAS COOLED TO PREVENT VACUUM COLLAPSE.

REMOVE ANY FUSIBLE DEVICES BEFORE STEAM CLEANING TO PREVENT DAMAGING FUSIBLE ELEMENT. DO NOT HAMMER OR TIGHTEN EXCESSIVELY WHEN INSTALLING FUSIBLES.

MAINTAIN ALL SEALS AND GASKETS SO MANHOLES, VENTS, AND FITTINGS SEAL PROPERLY WITH MODERATE FORCE TO AVOID LEAKAGE AND DAMAGE TO COMPONENT.

TKA 9848

DANGER

PURGE TANK BEFORE ENTERING OR REPAIRING. COMMODITY FUMES MAY BE INJURIOUS OR EXPLOSIVE.

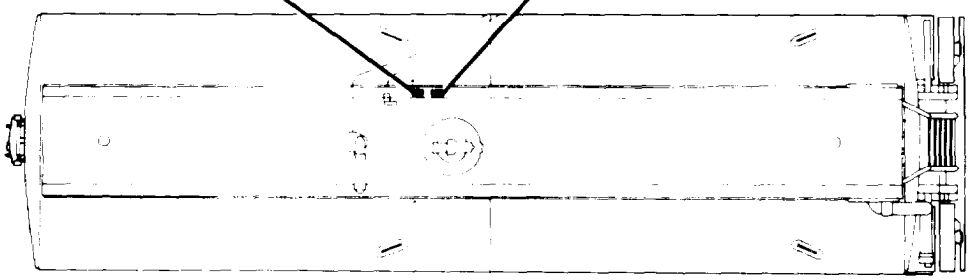
PURGE AND VENTILATE ALL FLASHING RAILS AND PIPING IF WELDING IS TO BE PERFORMED.

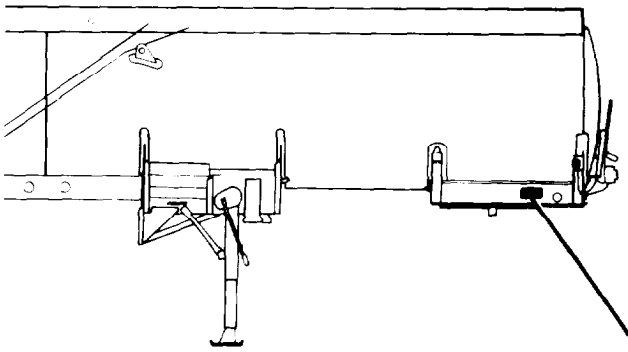
KNOW WHAT COMMODITY WAS PREVIOUSLY CARRIED TO AVOID MIXING OF INCOMPATIBLE MATERIALS.

USE PROPER CLEANING SOLUTION COMPATIBLE WITH COMMODITY PREVIOUSLY CARRIED.

CONSULT DATA PLATE FOR TANK MATERIAL, SPECIFICATION INFORMATION, PRESSURE AND TEMPERATURE RATING.

T-KA 8662





RUSTPROOFING DATA

THIS SEMITRAILER HAS BEEN TREATED WITH A CORROSION PREVENTATIVE COMPOUND CONFORMING TO THE REQUIREMENTS OF MIL C 6221B TYPE 1

SEMITRAILER MANUFACTURER — LIQUID AND BULK TANK DIVISION FRUEHAUF TRAILER OPERATIONS

SEMITRAILER M-1062 — CONTRACT NO. DAAE07 87 C JO61

APPLICATOR — DATE APPLIED

RUSTPROOFING COMPOUND SUPPLIER

TKG5470 1M

1-11. EQUIPMENT DATA.

DIMENSIONS	
Center of Gravity (front bulkhead flange to center of gravity):	
Loaded	202 in. (513.1 cm)
Unloaded	274 in. (696 cm)
Front Bulkhead Flange to Kingpin Center	32.75 in. (83.2 cm)
Kingpin Center to Landing Gear Center	96.75 in. (245.8 cm)
Kingpin to Midpoint of Tandem Axles	329.50 in. (836.9 cm)
Overall:	
Height [empty at 49.50 in. (125.7 cm) coupler height]	121.44 in. (308.5 cm)
Length	433 in. (1099.8 cm)
Width (including tire bulge)	96.375 in. (244.8 cm)
Tank:	
Height (inside)	59 in. (149.9 cm)
Length (from front bulkhead flange to rear bulkhead flange)	398 in. (1010.9 cm)
Weight (fully loaded and M915A1 tractor):	
At semitrailer tandem axle	35,280 lb. (16 metric tons)
Total	83,750 lb. (38 metric tons)
AXLE ASSEMBLIES	
Quantity	2
Track	71.50 in. (181.6 cm)
BRAKE SYSTEM	
Actuation	air-operated S-cam
Air Reservoirs, Quantity	2
Brake Chamber:	
Length of pushrod	$7\frac{5}{8}$ in. (19.4 cm)
Quantity	4
Brake Linings	non-asbestos
Drum Size	16½ x 7 in. (41.9 x 17.8 cm)
ELECTRICAL SYSTEM	
Power Source	tractor
Voltage	12 or 24 vdc
FIRE EXTINGUISHERS	
Location	roadside and curbside
Quantity	2
Type	Purple-K-Powder (P-K-P)
FUEL LOADING/UNLOADING SYSTEM	
Automatic Level Sensing Device	fluid jet
Fuel Filtering Method	0.75 in. (19 mm) “Y” strainer with screen
Fuel Transfer Hoses:	
Length	14 ft. (4.27 m)
Quantity	2
Stowage (cluster)	1 horizontal tube: access at each end lockable

1-11. EQUIPMENT DATA (Con't).

FUEL LOADING/UNLOADING SYSTEM (Continued)	
Fuel Transfer Options:	
Bottom loading:	
Location	front port or rear inlet
Rate	600 gpm (2271 lpm)
Top loading:	
Location	manhole fill cover
Rate	600 gpm (2271 lpm)
Unloading:	
Location	front port only
Type	gravity or with assistance of 350-600 gpm (1325-2271 lpm) pump
Precheck System:	
Actuation	manual
Location of controls	roadside cabinet
Precheck valve	½ in. (12.7 mm) ball-type
Pressure gage	2½ in. (6.4 cm) silicone oil-filled, 0-100 psi (0-690 kPa)
Grounding Reels:	
Cable length [includes 15 ft. (4.58 m) "Y" branch]	50 ft. (15.25 m)
Location	roadside cabinet
Quantity	2
Grounding Studs, Quantity	6
Manhole:	
Diameter	20 in. (50.8 cm)
Fill cover diameter	10 in. (25.4 cm)
KINGPIN	
Towing Facility	2 in. (5.1 cm) kingpin
LANDING GEAR	
Operation (curbside)	handcrank
Type	2 speed
SUSPENSION	
Adjustable Radius Rods:	
Location	roadside
Quantity	2
Fixed Radius Rods:	
Location	curbside
Quantity	2
Springs:	
Quantity	4
Quantity of leaves	3
Rated load	10,000 lb. (4540 kg)
TANK	
Capacity	7500 gallons (28,387.5 l)
Construction	welded, 7 internal baffles

1-11. EQUIPMENT DATA (Con't).

TIRES	
Inflation	95 psi (655 kPa)
Quantity	8 plus spare
Size	11 R 22.5
Type	14 ply rating, highway tread, steel belted, tubeless radial
RIMS	
Size	22.5 x 8.25
Type	dual
WHEELS	
Type	5 spoke

Section III. TECHNICAL PRINCIPLES OF OPERATION

Paragraph Number	Title	Page Number
1-12	Electrical System	1-24
1-13	Brake System	1-27
1-14	Suspension System	1-30
1-15	Fuel Loading/Unloading System	1-31

1-12. ELECTRICAL SYSTEM.

a. *GENERAL.*

(1) The M1062 7500 Gallon Fuel Tank Semitrailer electrical system supplies power to semitrailer lights under both standard and blackout modes.

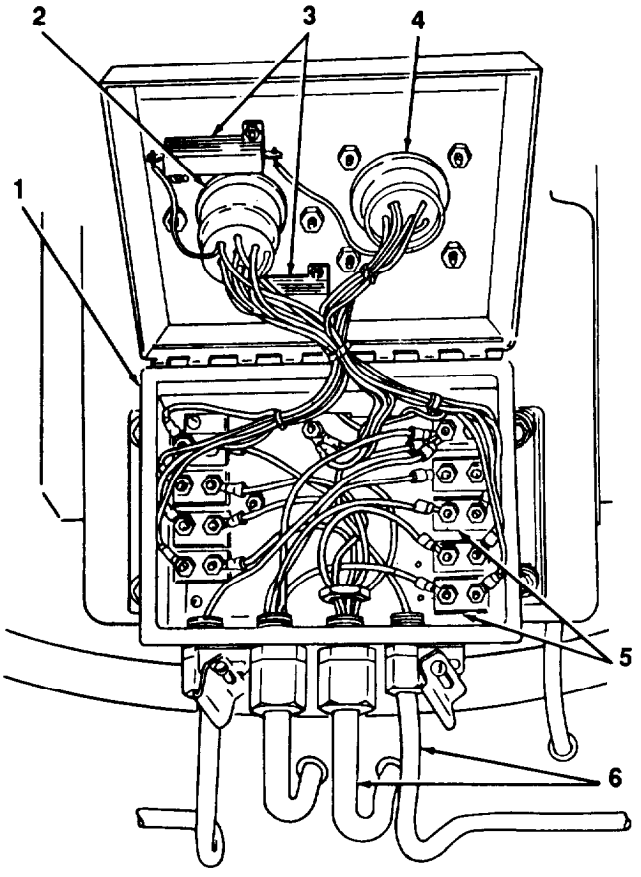
(2) Standard lights operate on either 12 volts or on 24 volts with voltage reduction circuitry.

(3) Blackout lights operate on 24 volts only.

(4) Toggle switch located at roadside rear light box is used to direct power to optional convoy warning light when light is in use.

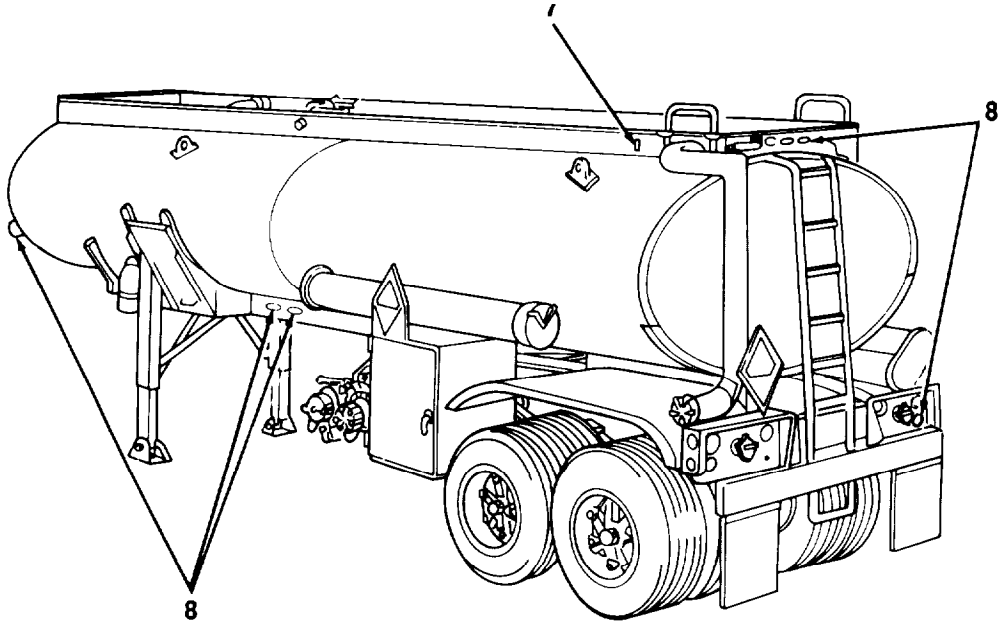
1-12. ELECTRICAL SYSTEM (Con't).

b. *MAJOR COMPONENTS AND THEIR FUNCTION.*

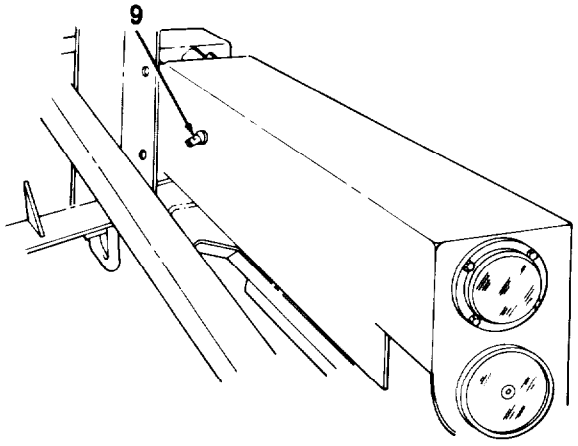


KEY	NAME	FUNCTION
1	Voltage Control Unit	Mounted on nose adapter at front of semitrailer. Regulates and directs power flow from tractor to semitrailer lights. 12-volt and 24-volt electrical connectors are mounted on cover of unit.
2	12-volt Electrical Connector	Male connector for tractor 12-volt intervehicular plug.
3	Resistors	Used to reduce incoming 24 V to 12 V.
4	24-volt Electrical Connector	Male connector for tractor 24-volt intervehicular plug.
5	Circuit Breakers	Protect semitrailer circuits from too much current passing through. Are a cycling or continuously self-resetting unit. Circuit breakers CANNOT be reset manually.
6	Conduit	Metal tubing protects individual wires, or groups of wires, from damage.

1-12. ELECTRICAL SYSTEM (Con't).

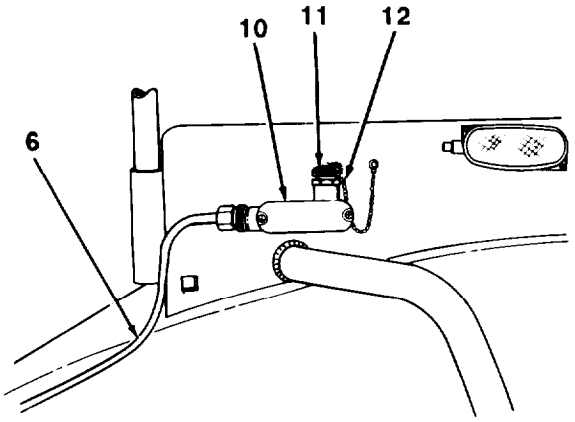


KEY	NAME	FUNCTION
7	Convoy Warning Light Mounting Bracket	Used to mount convoy warning light.
8	Light/Reflector Installations	Mark front, midline, rear, and top of semitrailer. Must be in good working condition for semitrailer to be mission ready.



KEY	N A M E	FUNCTION
9	Convoy Warning Light Toggle Switch	ON/OFF power switch for convoy warning light.

1-12. ELECTRICAL SYSTEM (Con't).



KEY	NAME	FUNCTION
10	Convoy Warning Light Condulet	Housing for female receptacle into which convoy warning light is plugged when light is in use.
11	Cap	Covers female receptacle when not in use. Attached retaining chain prevents loss of cap.
12	Female Receptacle	Threads into convoy warning light condulet. Contains recessed female contacts for safety and protection.
6	Conduit	Metal tubing protects convoy warning light wires from damage.

1-13. BRAKE SYSTEM.

a. GENERAL.

(1) Air pressure generated by tractor's compressor is sent through intervehicular air couplings (EMERGENCY and SERVICE), a series of air lines, connectors, and valves to a forward and rear air reservoir where it is stored until needed to actuate brakes at each axle.

(2) Axle-mounted brake chambers receive air pressure from air reservoirs when service brakes are applied. Compressed air is converted inside brake chambers to mechanical energy which travels from brake chamber pushrod through a series of mechanical linkages to axle-mounted brake components.

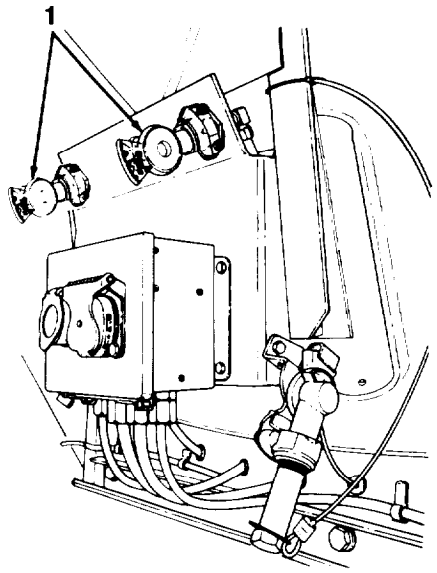
(3) Cam-actuated brake shoes are forced against drums to stop semitrailer.

(4) If a planned or emergency loss of air pressure occurs, a large, powerful spring inside rear chamber of each brake chamber releases to apply semitrailer parking/ emergency brakes.

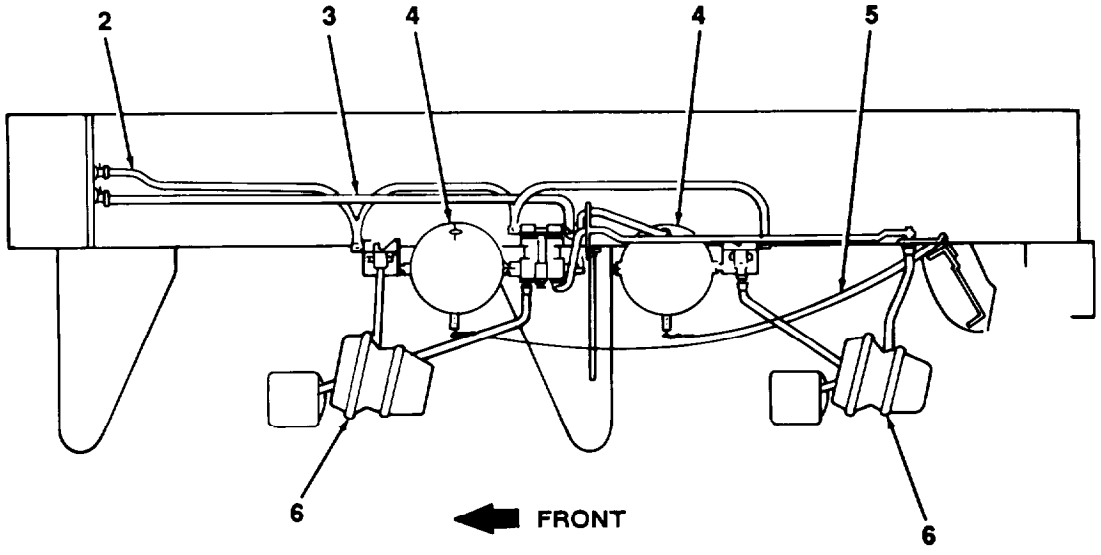
(5) A brake interlock system, mounted on piping assembly front port and rear inlet, provides for automatic setting of semitrailer parking/emergency brakes during fuel bottom loading and unloading.

1-13. BRAKE SYSTEM (Con't).

b. MAJOR COMPONENTS AND THEIR FUNCTION.



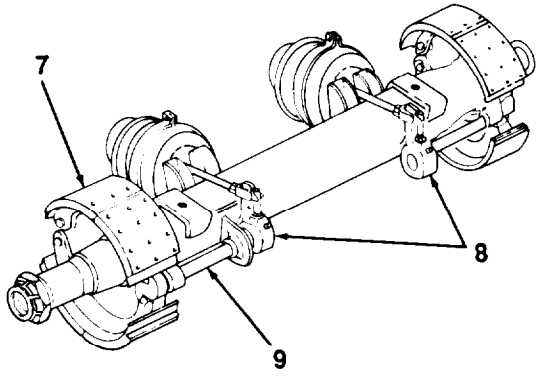
KEY	NAME	FUNCTION
1	EMERGENCY and SERVICE Air Couplings	Provide conveniently operated, leak-free air connections between tractor and semitrailer.



KEY	NAME	FUNCTION
2	SERVICE Supply Line	Delivers air pressure to air reservoirs and to semitrailer brakes whenever service brake pedal in tractor is applied.
3	EMERGENCY Supply Line	Delivers constant air pressure to air reservoirs and to rear chamber of each brake chamber.

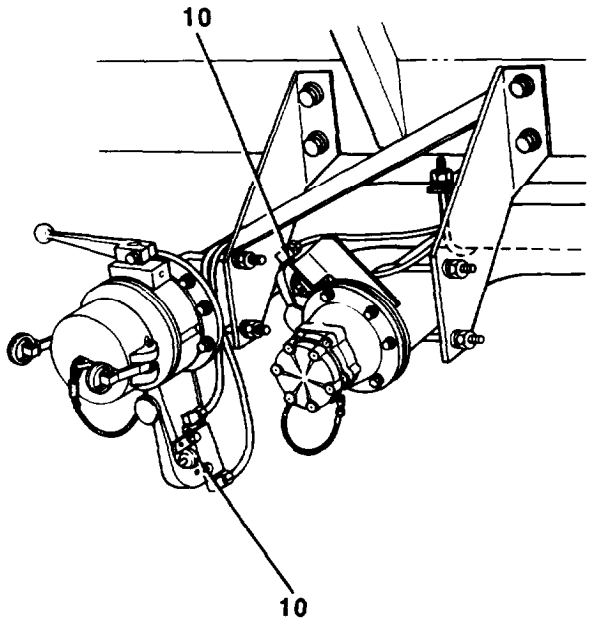
1-13. BRAKE SYSTEM (Con't).

KEY	NAME	FUNCTION
4	Front and Rear Air Reservoirs	Store compressed air under carefully controlled pressures until needed for use.
5	Draincock Cable	Connected to front and rear air reservoir draincocks. When pulled, allows drainage of moisture from air system.
6	Brake Chambers	Consist of two separate chambers:
	Rear Chamber	Receives a constant flow of air pressure to maintain spring deactivated for normal operation. With loss of air pressure during uncoupling, parking operations, or in an emergency, spring is activated and causes a mechanical parking/emergency brake operation.
	Front Chamber	Receives air pressure when service brakes in tractor are applied. Air pressure is converted to mechanical energy and sent to slack adjusters by way of brake chamber pushrod, and from there along camshafts to brake shoe assemblies.



KEY	NAME	FUNCTION
7	Brake Shoe Assemblies	Attached to axle at spider. Actuated by S-cam at end of camshaft to apply pressure for slowing or stopping drum rotation.
8	Slack Adjusters	Part of mechanical linkage. Function as an adjustable lever. Provide a quick and easy method of adjusting brakes to compensate for normal brake shoe lining wear. Are automatically self-adjusting under normal conditions.
9	Camshafts	Connected to slack adjusters. S-cam at end of camshaft serves to actuate brake shoe assemblies.

1-13. BRAKE SYSTEM (Con't).



KEY	NAME	FUNCTION
10	Brake Interlock Valves	Mechanically actuated by connection of fuel loading transfer hose to front port or rear inlet. Causes air system to lose air pressure which sets semitrailer parking/emergency brakes.

1-14. SUSPENSION SYSTEM.

a. GENERAL.

(1) The semitrailer uses a tandem axle suspension with front, center, and rear frame hangers welded to frame.

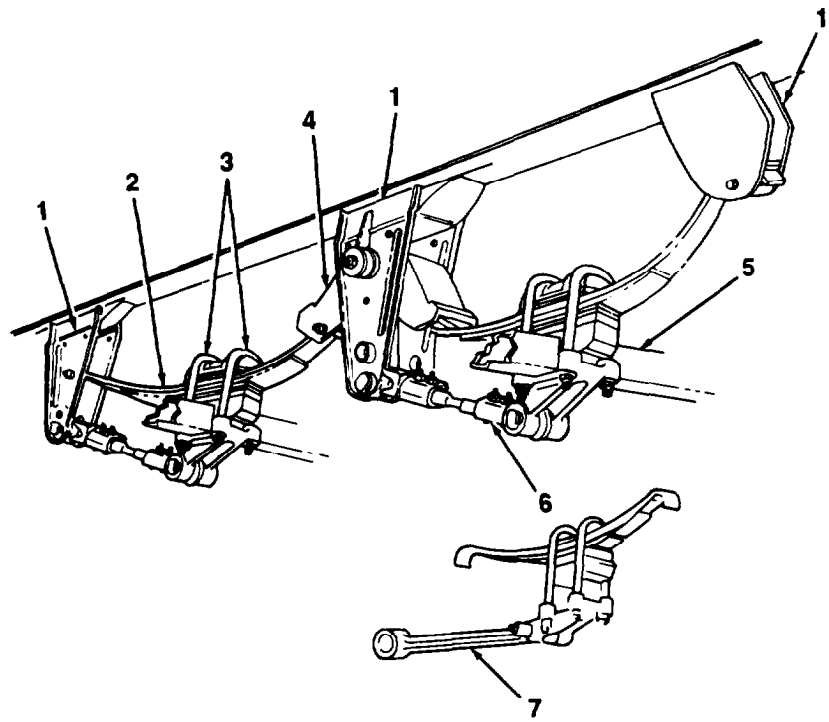
(2) The suspension system functions to tie front and rear axles together and to permit independent vertical movement of each axle as determined by road surface.

(3) Springs are supported and held in place between three frame hangers: two serve as mounts for radius rods, while the third furnishes support for rear spring end.

(4) Rubber bushings at most points of movement in suspension serve to cushion road shock.

1-14. SUSPENSION SYSTEM (Con't).

b. MAJOR COMPONENTS AND THEIR FUNCTION.



KEY	NAME	FUNCTION
1	Frame Hangers	Mounting structure for fixed and adjustable radius rods. Assist in holding springs in alinement.
2	Springs	Three leaf springs support semitrailer load and maintain straight alinement of chassis to axles.
3	U-bolts	Secure springs to axle.
4	Equalizer Assembly	Semitrailer load is equalized through leveling action of this pivoting assembly.
5	Axles	Secured to springs by U-bolts of heavy-duty construction. Attached to axles are brake components and wheel assemblies.
6	Adjustable Radius Rods	Located roadside, Permit independent alinement of each axle. Stabilize driving and braking forces.
7	Fixed Radius Rods	Located curbside. Stabilize driving and braking forces.

1-15. FUEL LOADING/UNLOADING SYSTEM.

a. GENERAL.

(1) The semitrailer carries a 7500 gallon load of fuel in a single compartment welded aluminum assembly. Seven internal baffles with staggered manways offer resistance to fuel surge when in transit and during bottom loading.

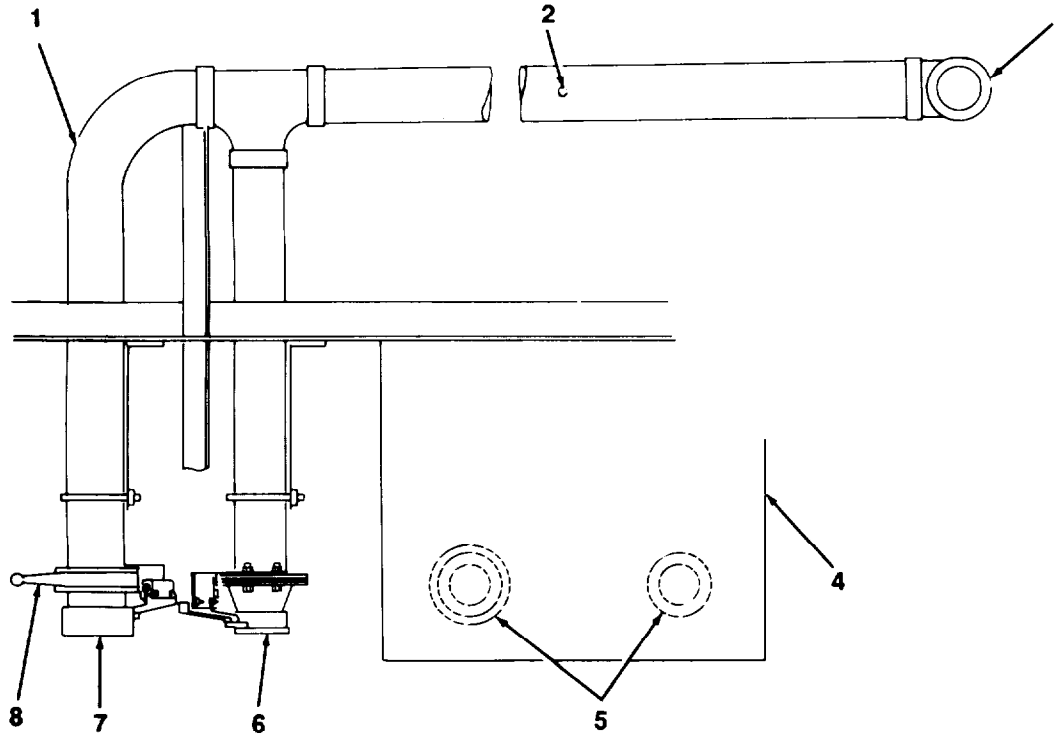
1-15. FUEL LOADING/UNLOADING SYSTEM (Con't).

(2) The semitrailer may be bottom loaded through either piping assembly front port or rear inlet at a maximum rate of 600 gpm (2271 Ipm). Top loading at a maximum rate of 600 gpm (2271 Ipm) is through the manhole fill cover. Fuel is unloaded by gravity discharge, or with the assistance of a 350-600 gpm (1325-2271 Ipm) pump, through piping assembly front port ONLY.

(3) Transfer hoses, stowed in curbside stowage tube, may be connected to provide additional length of hose for fuel loading or unloading.

(4) A precheck system. with controls in the roadside cabinet, functions to predict failure of automatic shut-off device (jet level sensor) during bottom loading.

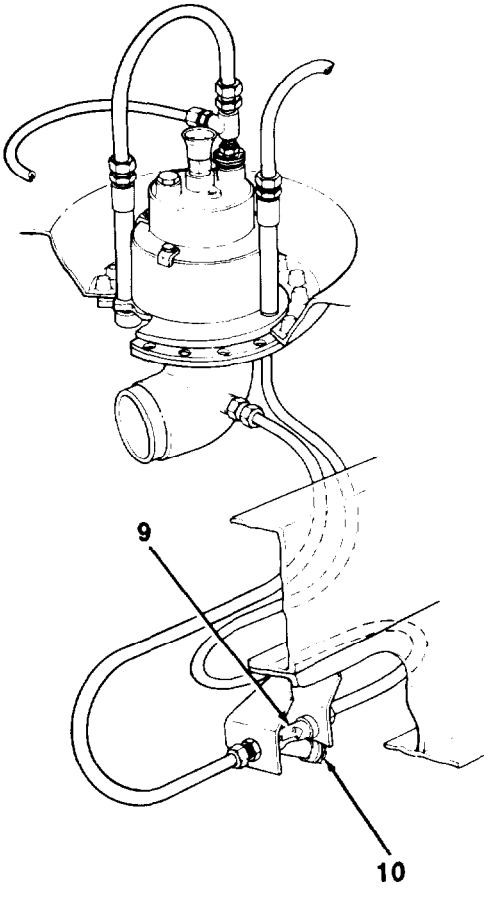
b. MAJOR COMPONENTS AND THEIR FUNCTION.



KEY	NAME	FUNCTION
1	Piping Assembly	A welded assembly that runs from emergency valve on underside of semitrailer to a roadside front port and rear inlet.
2	Coupling	Welded to piping assembly. Provides a tap for precheck tubing.
3	Emergency Valve	Set in a closed position when loading. Manually opened to allow fuel to leave tank when unloading. Emergency valve is operated by means of a control lever in cabinet or by two remote trip-releases (front roadside or top curbside).
4	Cabinet	Contains emergency valve and vapor vent control levers; precheck controls; storage for two grounding cable reels; transfer hose reducers; and Basic Issue Items (Bll).

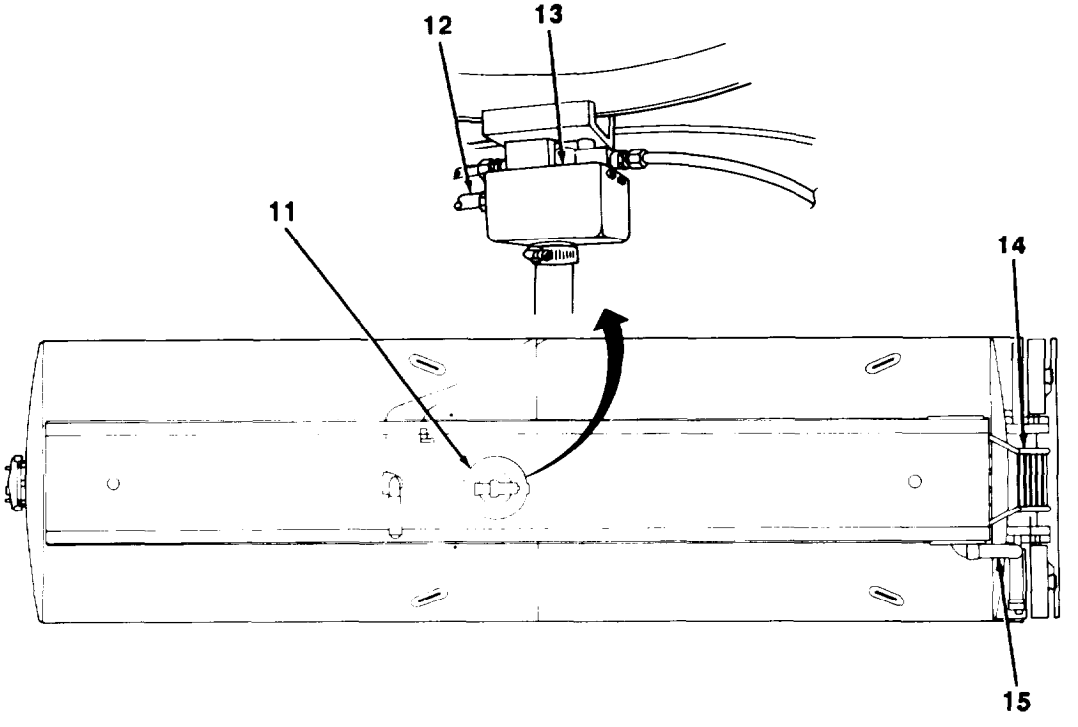
1-15. FUEL LOADING/UNLOADING SYSTEM (Con't).

KEY	NAME	FUNCTION
5	Reducers	Used as an adapter to join 3 in. (7.6 cm) to 4 in. (10.3 cm) loading hoses.
6	Rear Inlet	Uses a 2½ in. (6.4 cm) bayonet "D1" fitting to bottom load fuel.
7	Front Port	Uses a 4 in. (10.3 cm) camlock fitting to bottom load or unload fuel.
8	Butterfly Valve	A 4 in. (10.3 cm) valve which controls flow during loading and unloading.



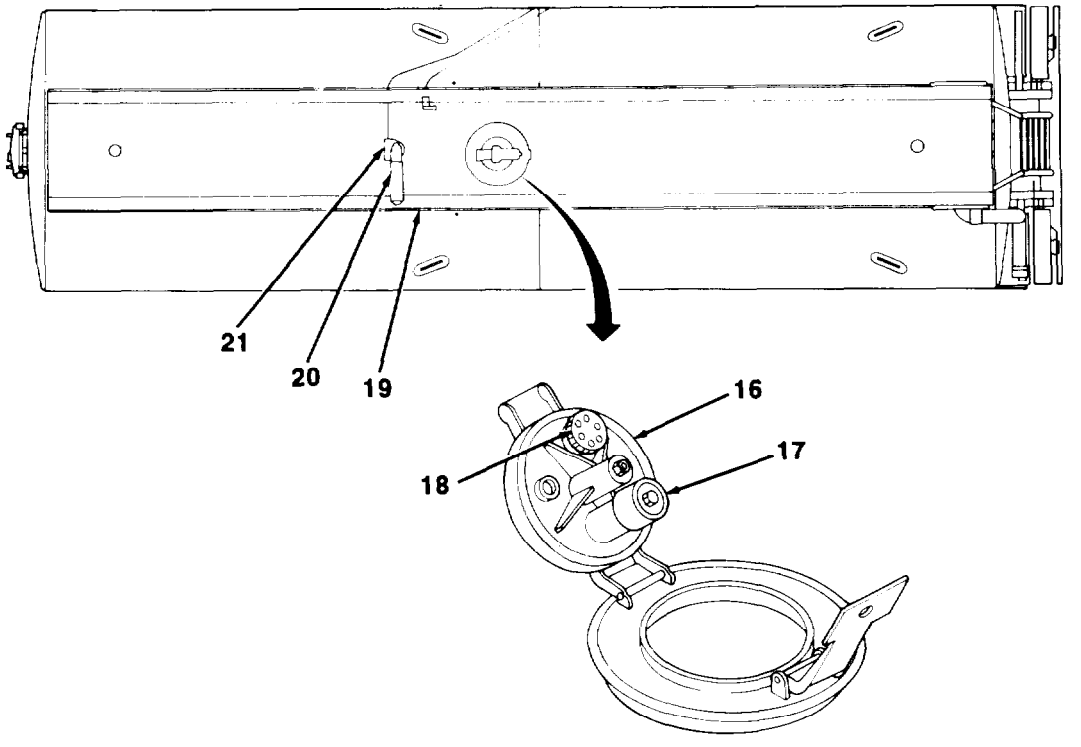
KEY	NAME	FUNCTION
9	Strainer Assembly	Filters contaminants from fuel being bottom loaded. Protects jet level sensor from damage or malfunction caused by fuel contaminants.
10	Center Plug	A ¼ in. (6.4 mm) plug which may be removed by the operator while bottom loading to allow for clearing of minor contaminants from strainer assembly.

1-15. FUEL LOADING/UNLOADING SYSTEM (Con't).



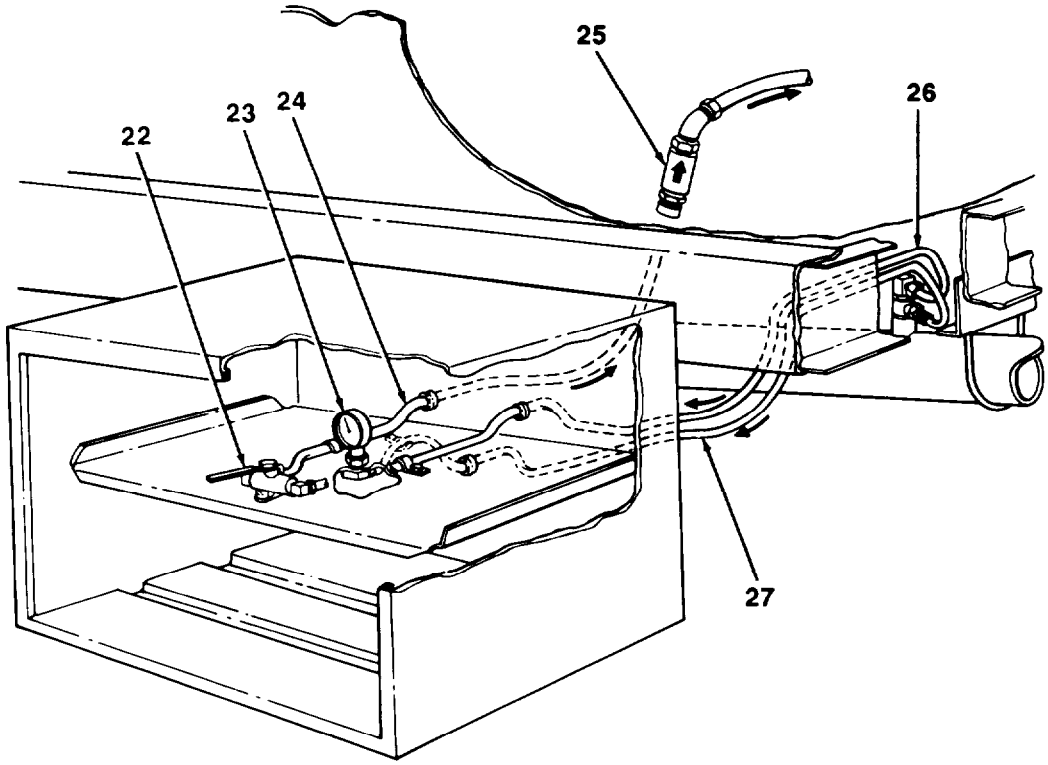
KEY	NAME	FUNCTION
11	Manhole	Provides access to inside of tank.
12	Precheck Tubing (Check Valve-to-Jet Level Sensor)	Delivers bottom loaded fuel to precheck can of jet level sensor: When can is full, a “full-tank” condition is simulated, pressure of fuel picked up by jet level sensor outlet orifice drops, and emergency valve closes to stop bottom loading.
13	Jet Level Sensor	Automatic level sensing and shut-off device which is part of bottom loading apparatus. Located at top inside of tank, just behind manhole opening. Depends on pressure from bottom loading source to force fuel through orifice. Automatically shuts off fuel al emergency valve when fuel in tank reaches preset capacity.
14	Ladder	Provides access to top of semitrailer. Drains spilled fuel contained within overturn rails and front and rear dams through its hollow vertical rails.
15	Vapor Return Line	Connects vapor collection header to ground level adapter, which is compatible with 4 in. (10.3 cm) quick disconnect field vapor recovery system connection.

1-15. FUEL LOADING/UNLOADING SYSTEM (Con't).



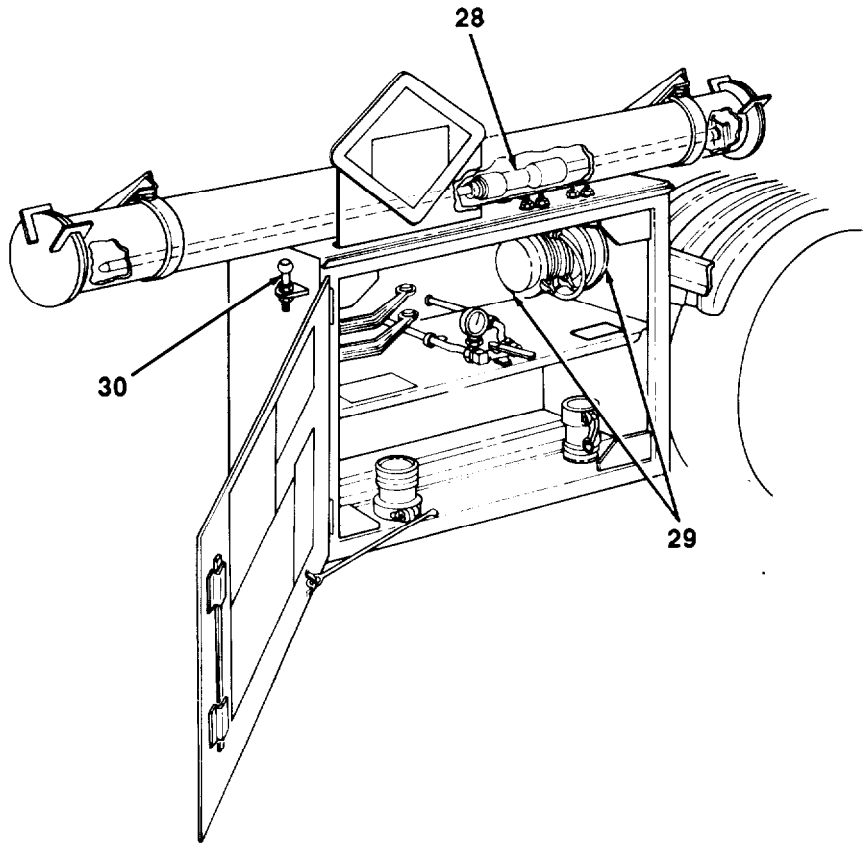
KEY	NAME	FUNCTION
16	Fill Cover	A 10 in. (25.4 cm) hinged opening in manhole allows top loading.
17	Pressure/Vacuum Vent	Helps prevent damage to tank if fuel is bottom loaded or unloaded with vapor vent closed. Offers a means of venting vapors created during fuel loading and unloading.
18	Vacuum Vent	Helps prevent collapse of tank if fuel is unloaded with vapor vent closed.
19	Overturn Rail (Roadside)	Hollow construction. Carries vapors from vapor vent hose to rear dam vapor collection header.
20	Vapor Vent Hose	Connects vapor vent to roadside overturn rail.
21	Vapor Vent	Located on top of semitrailer in front of manhole. Vent is spring loaded and cable operated by a control lever in cabinet. Protects tank from damage caused by vacuum or pressure during unloading or loading.

1-15. FUEL LOADING/UNLOADING SYSTEM (Con't).



KEY	NAME	FUNCTION
22	Precheck Valve	Manually operated ball-type valve controls fuel flow through precheck tubing.
23	Pressure Gage	Displays a pressure reading which indicates to operator whether emergency valve is open or closed. Operaor does not activate precheck cycle until pressure gage indicates a steady reading of 5-15 psi (34-103 kPa) .
24	Precheck Tubing (Precheck Valve-to-Check Valve)	Delivers fuel from outlet of precheck valve to inlet of check valve.
25	Check Valve	Installed as a safety feature to permit fuel flow in one direction only, as indicated by arrow on valve. If precheck tubing is damaged or removed for maintenance, fuel will not leak from tank.
26	Precheck Tubing (Piping Assembly-to-Precheck Valve)	Delivers fuel from tap at piping assembly to inlet of precheck valve inside cabinet.
27	Precheck Tubing (Piping Assembly-to-Pressure Gage)	Delivers fuel from tap at piping assembly to pressure gage inside cabinet.

1-15. FUEL LOADING/UNLOADING SYSTEM (Con't).



KEY	NAME	FUNCTION
	Grounding Devices:	Provide a means to safely discharge accumulated static electricity.
28	Ground Rod	Stowed in roadside stowage tube. Driven into ground to provide a safe ground when one is not readily available.
29	Grounding Reels	Two reels store two 50 ft. (15.25 m) cables, including a 15 ft. (4.58 m) "Y" branch with alligator-type end connections. Stowed in cabinet. Attach to ground rods, other vehicles, or portable ground rod to safely discharge static electricity.
30	Grounding Stud	Located in six places: top, front, rear, roadside, and curbside. Unpainted ball used to attach grounding cable.

Section IV. GENERAL SAFETY REGULATIONS

Paragraph Number	Title	Page Number
1-16	Scope	1-38
1-17	Safety Regulations	1-38

1-16. SCOPE.

a. Operation and maintenance of any fuel hauling semitrailer can be hazardous due to the flammable and explosive nature of the load.

b. This section contains a summary of safety regulations which MUST be strictly followed when operating or maintaining the M1062 Tank Semitrailer. Personnel who fail to follow these regulations endanger the mission, equipment, and lives of themselves and innocent bystanders.

C. Read and become familiar with all WARNINGs in the Warning Summary at the front of this manual.

d. Throughout this manual, WARNINGs are placed as they pertain to specific operational or maintenance procedures. Read these warnings and follow them exactly.

1-17. SAFETY REGULATIONS.

a. Refer to FM 10-20, FM 10-68, FM 10-69, and FM 10-71 to become familiar with safe fuel handling procedures.

b. Personnel engaged in the operation and maintenance of the semitrailer must not wear clothing that generates static electricity. DO NOT wear wool, nylon, silk, rayon, or other similar materials. Remove all contents from pockets. Wear rubber boots and gloves during fuel loading and unloading.

c. Before loading or unloading fuel, purging tank, or performing any unit, direct support, or general support maintenance on semitrailer, connect all bonding and grounding connections. Refer to paragraph 2-17 for information on proper bonding and grounding procedures.

d. Never climb on semitrailer without first touching grounding stud to discharge static electricity from your body.

e. Under normal circumstances, perform all maintenance on semitrailer outdoors, away from buildings, and with tank empty. The semitrailer tank should be checked to ensure that it is free of vapors that could ignite during maintenance activities.

f. If circumstances require that maintenance be performed inside a building, semitrailer tank must be thoroughly drained and purged, and exterior of semitrailer steam cleaned. Explosimeter test, after purging, must read in the SAFE zone (see paragraph 4-68). Even if semitrailer has tested SAFE with combustible gas indicator set, it MUST be retested prior to starting work each day and at regular intervals throughout the day. This test can be accomplished by authorized unit or direct support maintenance personnel with an MOS of 77 F or equivalent (see FM 10-20).

g. To reduce the risk of fire and explosion, DO NOT perform the following operations on semitrailer unless tank is drained, purged, and exterior of semitrailer steam cleaned:

(1) Replace any component that communicates with inside of tank and therefore comes in contact with fuel or vapors (manhole, jet level sensor and tubing, emergency valve, vapor collection system components, vent caps, sump drain, piping assembly, front port, or rear inlet).

(2) Troubleshoot electrical system with any test device other than the ohms scale of a multimeter.

1-17. SAFETY REGULATIONS (Con't).

(3) Weld or solder.

(4) Cut with acetylene torch or chisel and hammer.

(5) Drill (except aluminum).

h. Follow these rules if working inside a purged tank:

(1) Always provide adequate forced air ventilation with air directed inside to compartment where work is being performed.

(2) NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations.

(3) If the person inside the tank encounters any difficulties, the person stationed at the manhole must summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.

CHAPTER 2
OPERATING INSTRUCTIONS

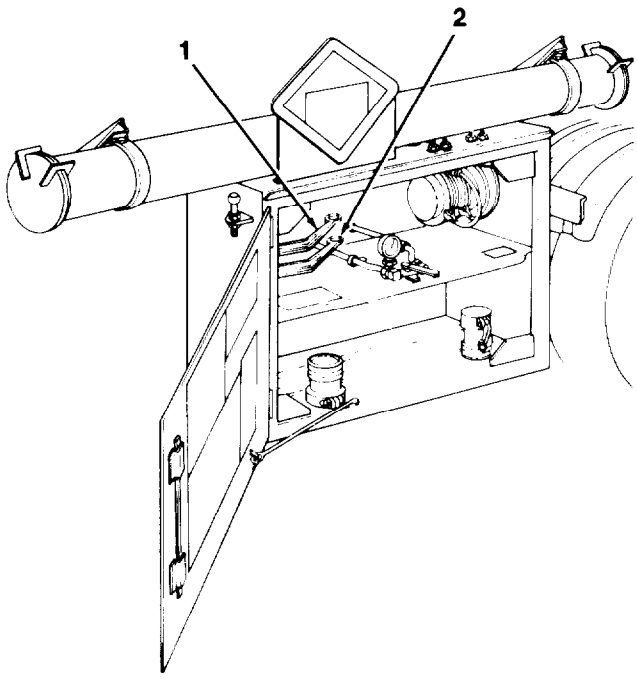
Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

Paragraph Number	Title	Page Number
2-1	Introduction	2-1
2-2	Controls and Indicators	2-1

2-1. INTRODUCTION.

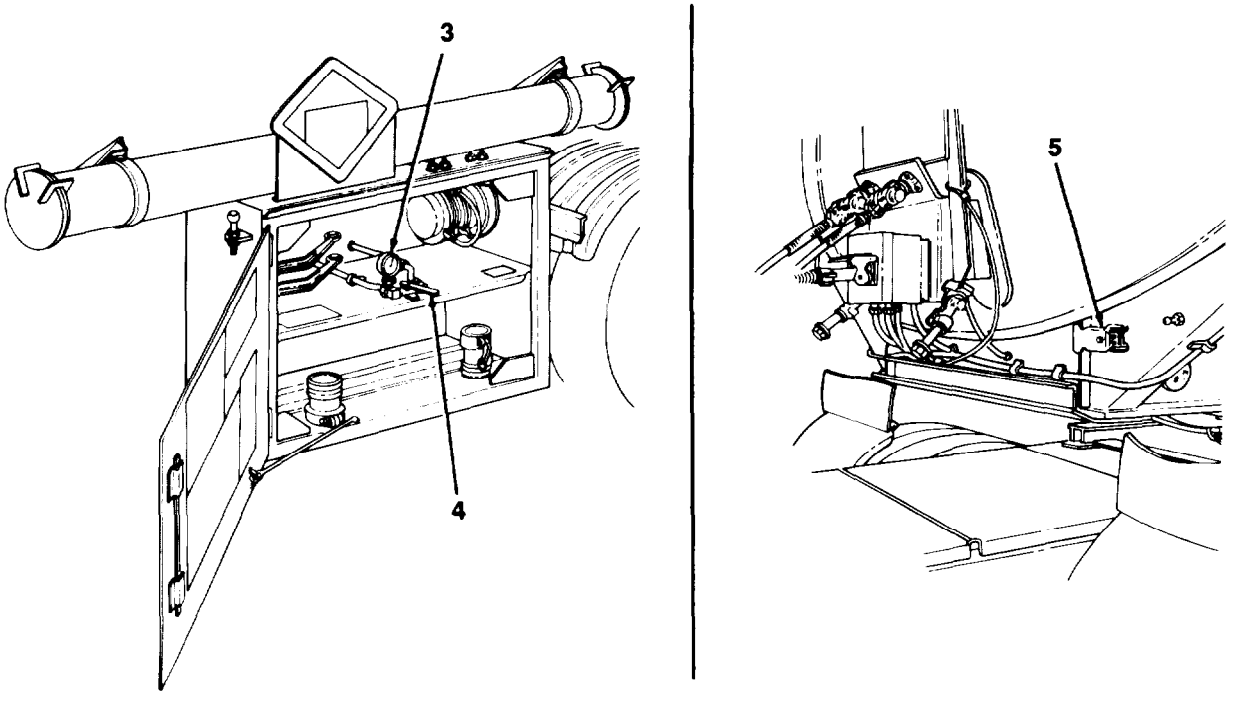
This section shows the location and function of all M1062 7500 Gallon Fuel Tank Semitrailer controls and indicators. Before operating semitrailer, review this section thoroughly.

2-2. CONTROLS AND INDICATORS.



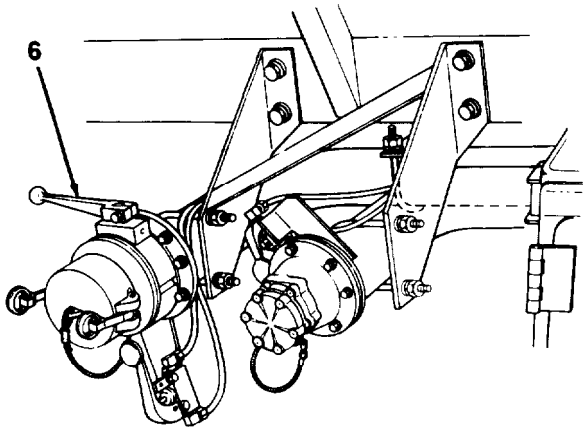
KEY	NAME	LOCATION	FUNCTION
1	Emergency Valve Control Lever	Cabinet, roadside.	Pull lever to open emergency valve when unloading fuel. Push lever to close emergency valve when bottom or top loading.
2	Vapor Vent Control Lever	Cabinet, roadside.	Pull lever to open vapor vent on top of semitrailer when bottom loading or unloading fuel.

2-2. CONTROLS AND INDICATORS (Con't).



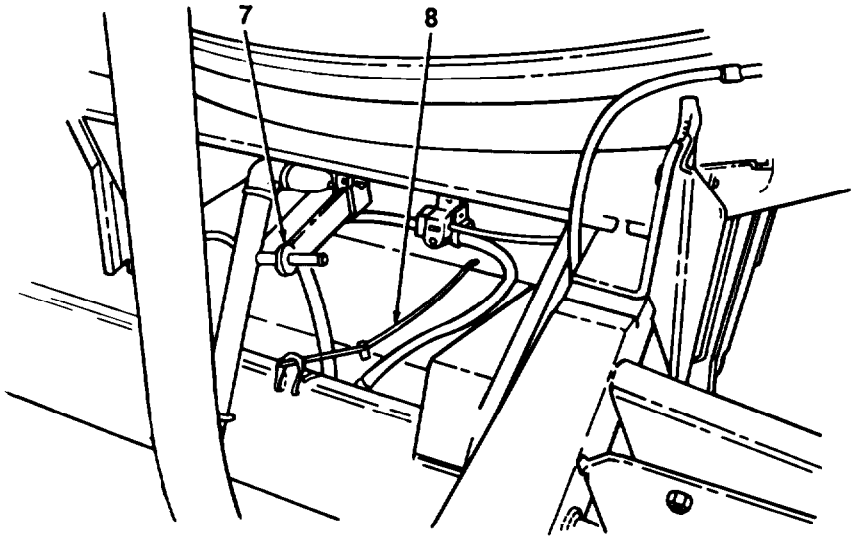
KEY	NAME	LOCATION	FUNCTION
3	Pressure Gage	Cabinet, roadside.	Indicates pressure in precheck tubing. Allows operator to determine status of bottom loading (whether emergency valve is open or closed).
4	Precheck Valve	Cabinet, roadside.	Turn handle ¼ turn counterclockwise to open precheck valve and activate precheck cycle. Turn handle ¼ turn clockwise to close precheck valve, deactivate precheck cycle, and resume bottom loading.
5	Emergency Valve Remote Trip-release	Front of semitrailer, roadside. Top of semitrailer, curbside.	Pull to close emergency valve, Use when not at cabinet.

2-2. CONTROLS AND INDICATORS (Con't).

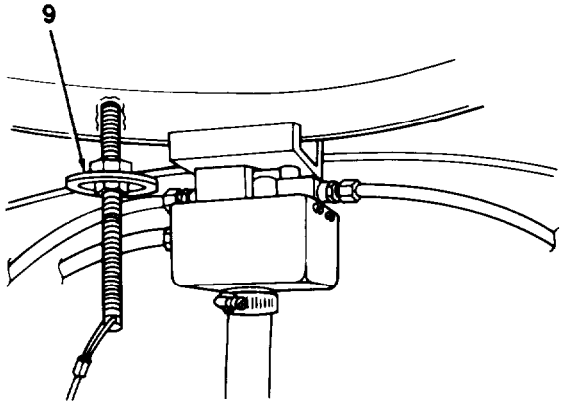


KEY	NAME	LOCATION	FUNCTION
6	Butterfly Valve	Piping assembly front port, roadside.	Controls fuel flow during unloading. Turn ¼ turn counterclockwise to open; ¼ turn clockwise to close.

2-2. CONTROLS AND INDICATORS (Con't).

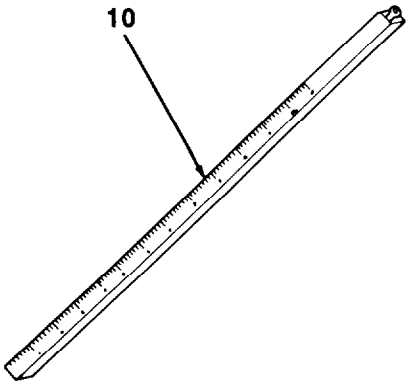


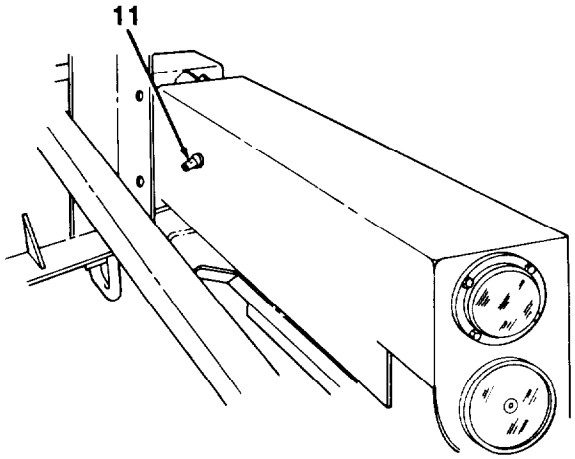
KEY	NAME	LOCATION	FUNCTION
7	Sump Drain Control Lever	Rear of semitrailer under tank shell.	Pull control lever to drain fuel and/or condensation collected in tank sump.
8	Air Reservoir Draincock Cable	Rear of semitrailer, attached to bumper.	Pull cable to open air reservoir draincocks. Release cable to close air reservoir draincocks.



KEY	NAME	LOCATION	FUNCTION
9	Gage Marker Disk	Inside tank, at manhole.	Allows operator to gage amount of fuel in tank when top loading.

2-2. CONTROLS AND INDICATORS (Con't).





KEY	NAME	LOCATION	FUNCTION
10	Gage Stick	Stowed in curbside tube assembly.	When placed upright in tank, calibrated marks on stick show level of fuel in gallons or liters.
11	Convoy Warning Light Toggle Switch	Rear of semitrailer, on front face of roadside light box installation.	ON/OFF power switch for convoy warning light.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Paragraph Number	Title	Page Number
2-3	General	2-6
2-4	Intervals	2-6
2-5	Reporting Repairs..	2-6
2-6	General PMCS Procedures	2-6
2-7	Specific PMCS Procedures	2-7
2-8	Cleaning Agents	2-8
2-9	Leakage Definitions	2-8
Table 2-1	Operator Preventive Maintenance Checks and Services (PMCS)	2-9

2-3. GENERAL.

a. To ensure that the M1062 7500 Gallon Fuel Tank Semitrailer is ready for operation at all times, it must be inspected on a regular basis so that defects may be found before they result in serious damage, equipment failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by the operator.

b. Before performing PMCS, read and follow all safety regulations found in Chapter 1, Section IV, General Safety Regulations.

2-4. INTERVALS.

Perform PMCS, found in Table 2-1, at following intervals:

- Perform Before (B) PMCS just before operating semitrailer.
- Perform During (D) PMCS while operating semitrailer.
- Perform After (A) PMCS right after operating semitrailer.
- Perform Weekly (W) PMCS once each week.
- Perform Monthly (M) PMCS once each month.

2-5. REPORTING REPAIRS.

All defects which the operator cannot fix must be reported on DA Form 2404, Equipment Inspection and Maintenance Worksheet, immediately after completing PMCS. If a problem is found, report it to unit maintenance IMMEDIATELY.

2-6. GENERAL PMCS PROCEDURES.

a. While performing PMCS procedures, always keep in mind CAUTIONS and WARNINGS.

b. While performing specific PMCS procedures, ensure that items are correctly assembled, secure, serviceable, and adequately lubricated as defined below:

(1) An item is CORRECTLY ASSEMBLED when it is in proper position and all parts are present.

2-6. GENERAL PMCS PROCEDURES (Con't).

(2) Wires, nuts, hoses, fittings, or attaching hardware are SECURE when they cannot be easily removed by hand or by wrench.

(3) An item is SERVICEABLE if it is not worn beyond repair or likely to fail before next scheduled inspection.

(4) An item is ADEQUATELY LUBRICATED if it has been lubricated in accordance with Chapter 3, Section I.

c. Perform inspections of welds, electrical conduits, tubing, and hoses as described below:

(1) Check for loose or chipped paint, rust, or cracks where parts are welded together. If a bad weld is found, notify unit maintenance.

(2) Look for cracked, frayed, loose, or broken electrical conduit, tubing, and hoses. Report all unserviceable items to unit maintenance.

d. Where the instruction clean appears in a procedure, use guidelines found in paragraph 2-8. Even if a procedure does not specify cleaning, be aware of any buildup of dirt, grease, oil, and debris. Clean any such buildups using cleaning agents authorized in Appendix E and relubricate as required (see Chapter 3, Section I).

2-7. SPECIFIC PMCS PROCEDURES.

a. Operator PMCS are provided in Table 2-1. Always perform PMCS in order listed. Once it becomes a habit, anything that is not right can be spotted in a minute. If any defects are discovered through PMCS, perform the appropriate troubleshooting task in Chapter 3, Section II. If any component or system is not serviceable, or if given service does not correct problem, notify unit maintenance.

b. The PMCS procedures in Table 2-1 are performed at five intervals: Before, During, After, Weekly, and Monthly. Before performing preventive maintenance, read all checks required for the applicable interval and prepare tools needed to make all checks. Have several clean rags (Item 18, Appendix E) handy. Perform ALL inspections at applicable interval.

c. The columns in PMCS table are defined as follows:

(1) **Item No.** Provides a logical sequence for PMCS to be performed and is used as a source number when recording PMCS results on DA Form 2404, Equipment inspection and Maintenance Worksheet.

(2) **Interval.** Specifies interval at which PMCS is to be performed.

(3) **Item To Be Inspected.** Lists system and common name of items that are to be inspected. Included in this column are specific servicing, inspection, replacement, or adjustment procedures to be followed.

NOTE

The terms “ready/available” and “mission-capable” refer to the same status: Equipment is on hand and is able to perform its combat mission (see DA Pam 738-750).

(4) **Equipment Is Not Ready/Available If:.** Explains when semitrailer is nonmission capable.

2-8. CLEANING AGENTS.

a. Keeping the semitrailer clean is an important part of proper PMCS. Equipment that is covered with surface dirt, grease, and oil cannot be properly inspected, nor will it operate as well as it should.

b. Keep excess lubricants away from exterior parts that do not require lubrication.

c. Use only those authorized cleaning solvents or agents listed in Appendix E.

2-9. LEAKAGE DEFINITIONS.

a. It is important to know how fluid leakage affects the status of the semitrailer. Following are types/classes of leakage an operator must know to determine whether the semitrailer is mission capable. Learn these leakage definitions. When in doubt, notify unit maintenance.

CLASS I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

CLASS II - Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being inspected.

CLASS Ill - Leakage of fluid great enough to form drops that fall from item being inspected.

b. A very important exception to leakage rules is leakage of fuel from semitrailer tank, piping assembly, or precheck and jet level sensor tubing. **NO FUEL LEAKAGE IS PERMITTED.**

c. Equipment operation is allowed with minor (Class I or II) leakage. Of course, fluid levels in an item/system affected with such leakage must be checked more frequently than required in PMCS. When in doubt, notify unit maintenance.

d. Class Ill leaks must be reported IMMEDIATELY to unit maintenance.

Table. Unit Preventive Maintenance Checks and Services (PMCS).

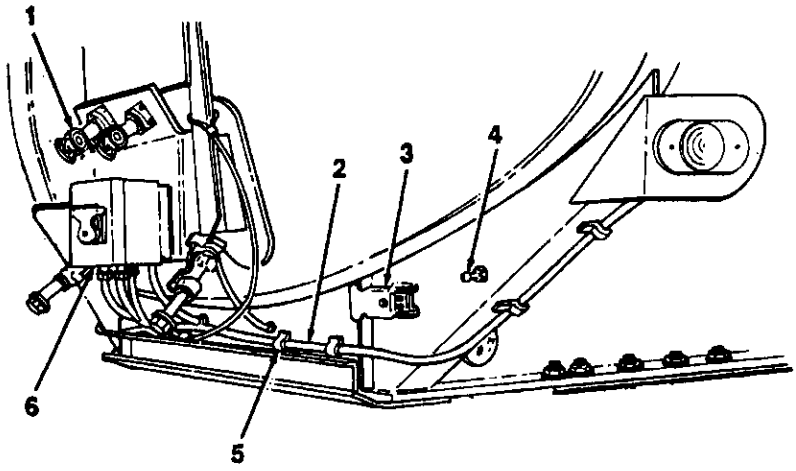
B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
						NOTE • **Perform these checks, in the order listed, within designated interval, as you walk around semitrailer.** • **Perform WEEKLY (W) and BEFORE (B) PMCS if:** a. You are operating semitrailer but have not operated it since last weekly (W) check. b. You are operating semitrailer for the first time.	
1						**OVERALL CHECK FOR FUEL LEAKAGE FROM TANK, PIPING ASSEMBLY, PRECHECK AND JET LEVEL SENSOR TUBING.**	
	•					a. Check for pools or small spots of fuel on ground, which could indicate a fuel leak. Check for leaks in precheck and jet level sensor tubing (see paragraph 1-15).	ANY FUEL LEAKS.
					•	b. Inspect tank and piping assembly for cracks, dents or bad welds.	Tank or piping assembly has cracks or bad welds.
2						**FRONT OF SEMITRAILER**	
	•					a. Check pick-up plate for proper lubrication and loose mounting bolts (see paragraph 1-7, Curbside View). If bolts are loose, notify unit maintenance.	
	•					b. Check upper coupler assembly for proper lubrication, looseness of mounting bolts, any bowed condition, and cracks (see paragraph 1-7, Roadside View). If bolts are loose, notify unit maintenance.	Upper coupler assembly is bowed or cracked.
	•					c. Check front clearance and marker lights and reflector for cleanliness and cracks (see paragraph 1-7, FRONT View). Clean any dirty light or reflector lens. If cracked or damaged, notify unit maintenance.	
	•					d. Check hazardous materials placards for broken or missing clips. Make sure placards move freely.	

Table. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
2						**FRONT OF SEMITRAILER (Con't)**	
	•					e. Check for tears or cracks in seals (1) of EMERGENCY and SERVICE air couplings. If seals are torn, cracked, or missing, notify unit maintenance.	Air coupling seals are torn, cracked, or missing.
	•					f. Inspect front roadside emergency valve remote trip-release (3) for looseness or damage.	Emergency valve remote trip release is damaged or missing.
	•					g. Inspect electrical conduit (2) to ensure that it is properly supported with clips (5), it is not damaged, and all connections at voltage control unit (6) are tight. Notify unit maintenance of any looseness or damage.	
	•					h. Check grounding stud (4), located front roadside, for looseness or damage. Clean any paint, grease, or dirt on grounding contact surface. If loose or damaged,	Any damage is found that will prevent proper grounding of semi-



3						**ROADSIDE OF SEMITRAILER**	
	•					a. Check that roadside fire extinguisher is present, properly covered and secured, and fully charged.	Fire extinguisher is missing or not fully charged.
	•					b. Check that landing gear ground board is present and securely stowed (see paragraph 1-7, Roadside View).	

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
3						**ROADSIDE OF SEMITRAILER (Con't)**	
	•					c. Check side clearance and marker light and reflector for cleanliness and cracks (see paragraph 1-7, Roadside View). Clean any dirty light or reflector lens. If cracked or damaged, notify unit maintenance.	
						CAUTION **Ensure that front port dust cap (7) is properly installed. If front port dust cap is not properly installed, brake interlock system will cause semitrailer brakes to lock up.**	
	•					d. Check that piping assembly front port dust cap (7) and rear inlet cover (8) are latched in place. Install front port dust cap with notch alined with brake interlock paddle (10). Ensure that paddle does not become pushed in.	
	•					e. Inspect brake interlock valves (9) and air lines at piping assembly front port and rear inlet for looseness or damage.	Brake interlock valve: and air lines are loose or damaged.

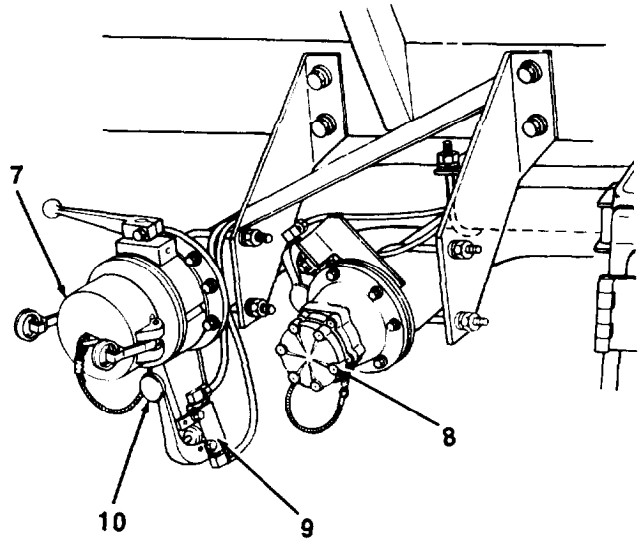


Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
3						**ROADSIDE OF SEMITRAILER (Con't)**	
	•					f. Check grounding stud (4) at cabinet for looseness or damage. Clean any paint, grease, or dirt on grounding contact surface. If loose or damaged, notify unit maintenance.	Any damage is found that will prevent proper grounding of semitrailer.
	•					g. Check that all Basic Issue Items (BII) in cabinet are present (see Appendix C). Check that two transfer hose reducers (18) are present.	Transfer hose reducers missing.
	•					h. Check that grounding reels (16) in cabinet are present and secured.	Grounding reels are damaged or missing.
	•					i. Check that emergency valve control lever (12) and vapor vent control lever (13) are securely mounted to cabinet and are not damaged.	Emergency valve or vapor vent control levers damaged.

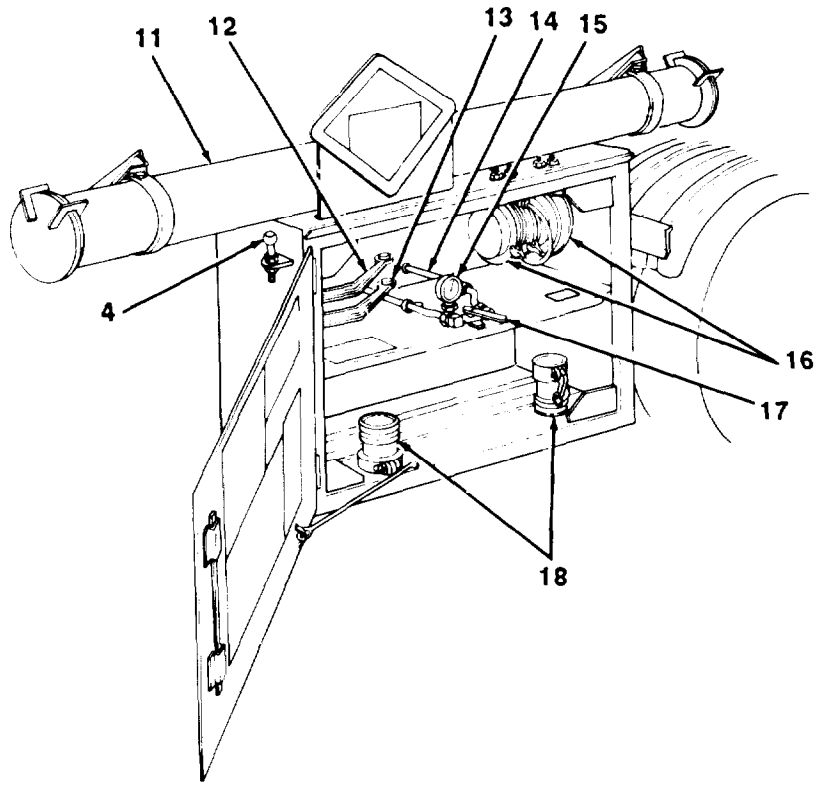
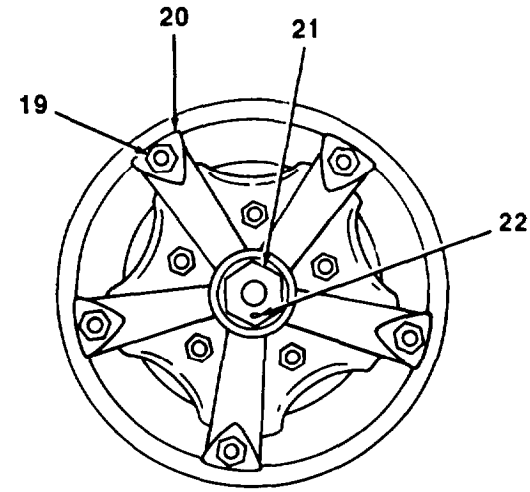


Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
3						**ROADSIDE OF SEMITRAILER (Con't)**	
	●					i. Check pressure gage (15) and precheck valve (17) for looseness or damage. Check that pressure gage is filled with fluid and is not cracked and leaking. Check that precheck tubing (14) is securely connected to pressure gage and precheck valve.	
	●					k. Check that ground rod is stowed in roadside stowage tube (11) and that stowage tube doors close properly at each end.	Ground rod is damaged or missing.
	●					l. Check for fluid leakage from hubcaps (21) at front and rear wheels.	CLASS Ill leakage is found.
	●					m. Check level of lubricating oil at hubcaps (21) of front and rear wheels. If level is below fill mark (22), notify unit maintenance.	
					●	n. Check wheel nuts (19) and rim clamps (20) for looseness or damage.	One or more wheel nuts and/or rim clamps are missing.



	●					o. Check tires for cuts, gouges, cracks, or sharp objects. Remove any objects lodged between tire treads or dual wheels.	Tires have cuts gouges, or cracks that would result in tire failure during operation. Tire missing or unserviceable.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con?).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
3						**ROADSIDE OF SEMITRAILER (Con't)**	
				●		p. Gage tires for proper inflation. Inflate tires to 95 psi (655 kPa).	
						WARNING **Cautiously feel each wheel hub and drum. Wheel hubs or drums may be hot. Failure to follow this warning may result in burns.**	
			●			q. Cautiously feel each wheel hub and drum. Check for a wheel hub or drum that is hotter or cooler than others. Overheating could indicate improperly adjusted or defective wheel bearings or a locked-up brake. A cool wheel hub and drum could indicate an inoperative brake. Report any abnormal conditions to unit maintenance IMMEDIATELY.	
	●					r. Check that chock blocks are present (see paragraph 1-7, Roadside View).	
4						**REAR OF SEMITRAILER**	
	●					a. Pull on cable (25) at semitrailer bumper to open air reservoir draincocks. Allow all accumulated moisture to drain. When no more water sprays or drips from air reservoirs, release cable pull to close draincocks.	
	●			●		b. Remove security bolt (24). Place a suitable drain pan under sump drain (26). If tank is empty, pull on control lever (23) and allow any water from condensation or remaining fuel to drain from sump. If tank is loaded, operate control lever only until water from condensation is drained. Push on control lever to close sump drain. Install security bolt.	
	●					c. Check that electrical conduit (2) at rear is properly supported by clips (5) and is not damaged.	

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
4						**REAR OF SEMITRAILER (Con't)**	

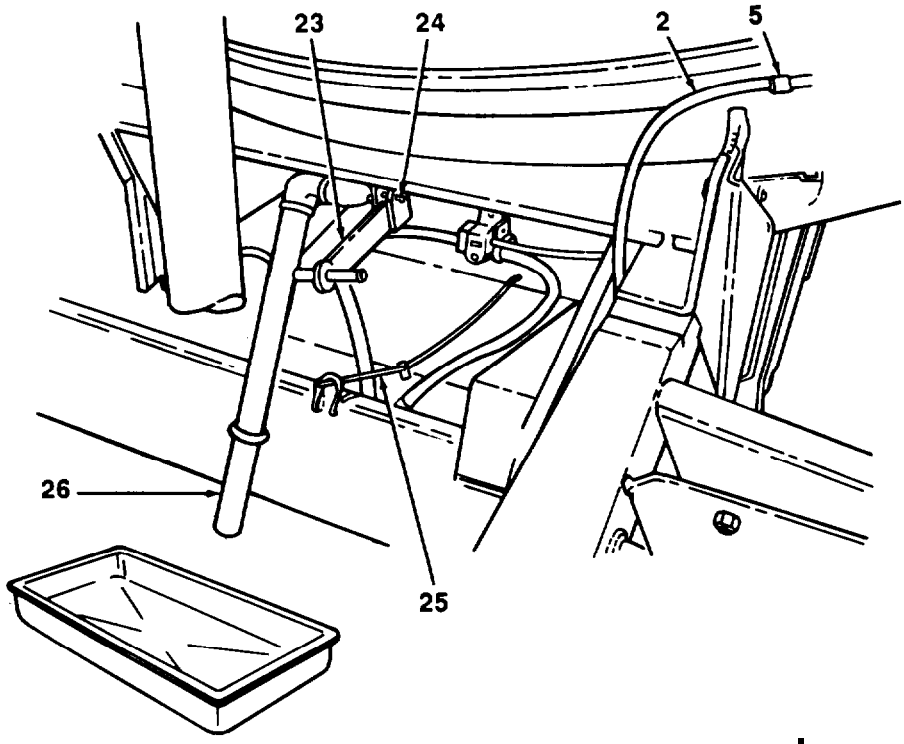


Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, of Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
4						**REAR OF SEMITRAILER (Con't)**	
	•					d. Check grounding stud (4) on roadside of bumper for looseness or damage. Clean any paint, grease, or dirt on grounding contact surface. If loose or damaged, notify unit maintenance.	Any damage is found that will prevent proper grounding of semitrailer.
	•					e. Check triple clearance light assembly (28) and lights and reflectors at light boxes (30) for cleanliness and cracks. Clean any dirty lights or reflector lenses. If cracked or damaged, notify unit maintenance.	
	•					f. Check splashguards (31) for presence. Notify unit maintenance if missing.	
	•					g. Check that vapor return line (27) is securely mounted with no obvious damage. Check that dust cap (32) is in place.	
	•					h. Inspect ladder (29) for damage and security of mounting. Notify unit maintenance of any damage found.	

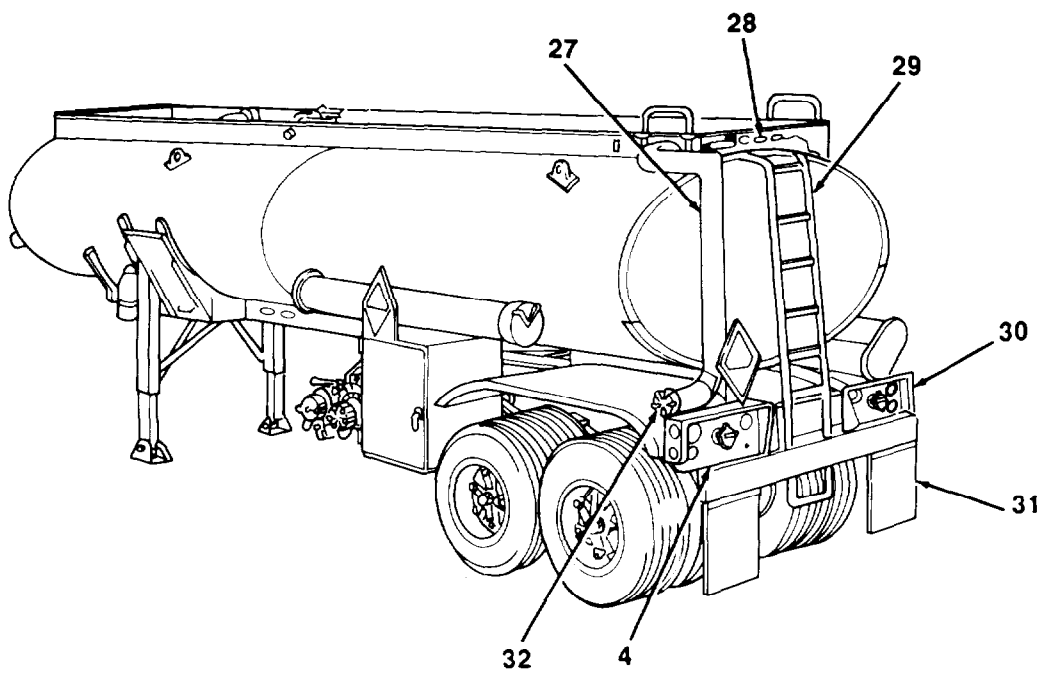
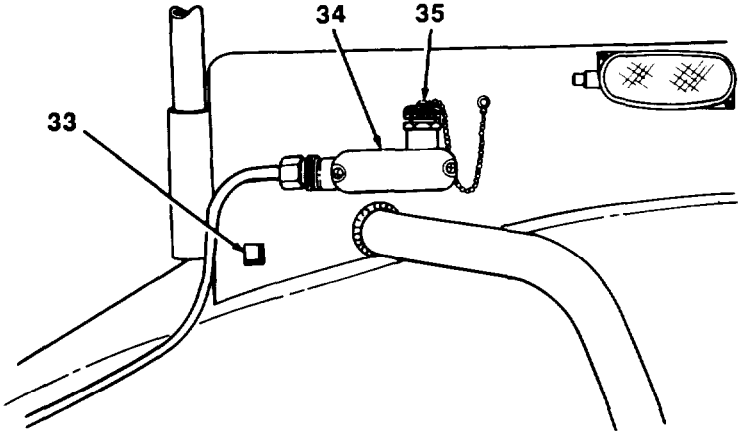


Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
4						**REAR OF SEMITRAILER (Con't)**	
	•					i. Check for presence of plug (33) on roadside of rear dam.	
	•					j. Check convoy warning light condulet (34) for looseness or damage. If convoy warning light is not installed, ensure that receptacle cap (35) is in place.	
	•					k. If convoy warning light is installed, ensure that cable is securely plugged into receptacle at condulet (34).	



5	•					**UNDER SEMITRAILER** a. Look under semitrailer and check for signs of fluid dripping from area of drum (36) and down inner surface of tires. Fluid leakage indicates a damaged wheel oil seal.	CLASS III leakage is found.

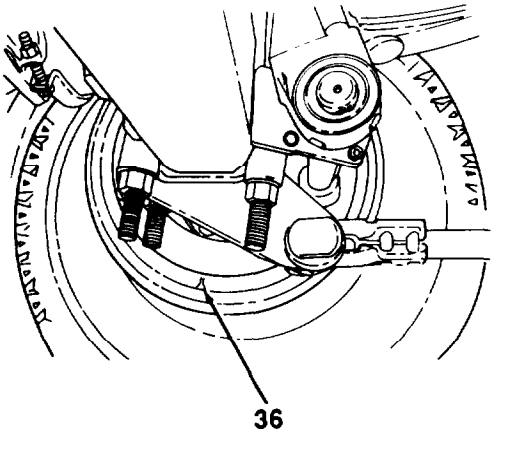


Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

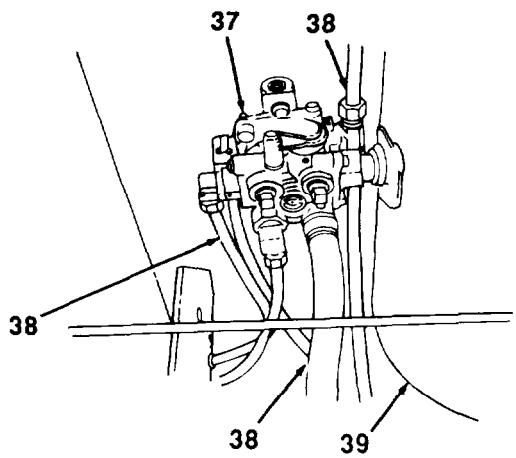
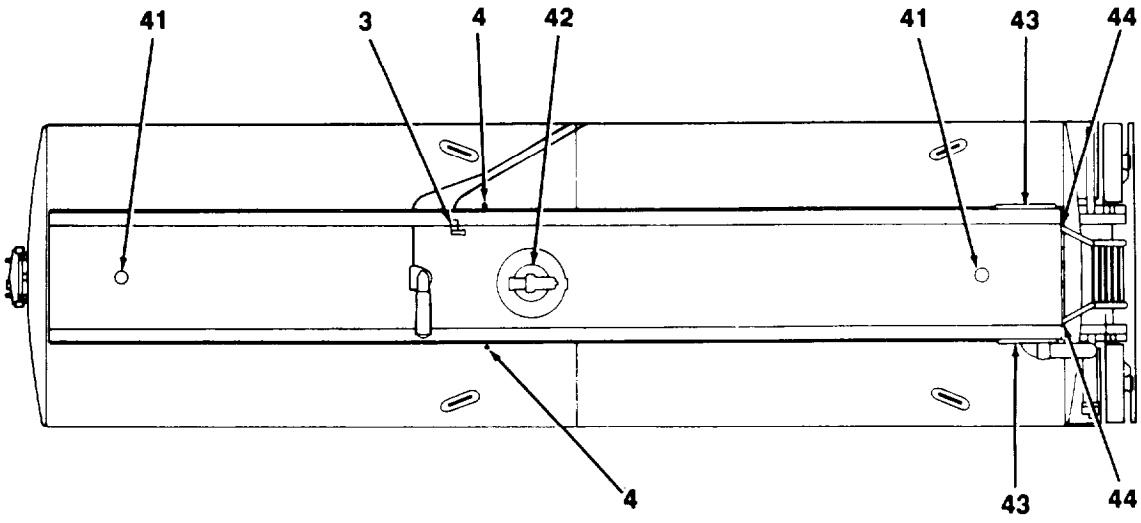
ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
5						**UNDER SEMITRAILER (Con't)**	
	•					b. Look under semitrailer and check all air lines (38) for kinks, rubbing, or obvious damage. Air lines should be well supported. Air line connections to air reservoirs (39), brake valves (37), and brake chambers should not be loose.	Kinks, rubbing, or other obvious damage is found.
							
	•					c. Check for loose or damaged suspension components. Check springs for a cracked leaf. If any suspension fastener is loose, notify unit maintenance.	Suspension components are damaged.
6						**TOP OF SEMITRAILER**	
						WARNING **Use extreme caution when working or walking on top of semitrailer. Walkway can be slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.**	
					•	a. Check that rear ladder drains (44) are free of debris that would hinder drainage in event of fuel spillage.	
	•					b. Check that grabhandles (43) are present and securely mounted to overturn rails.	

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
6						**TOP OF SEMITRAILER (Con't)**	



WARNING

DO NOT open vent cap. With vent cap open, vapors inside tank could ignite if a spark is produced. The resulting fire and explosion will result in serious injury or death to personnel.

	●					c. Check for fuel leaks at rear vent cap (41). Check that vent cap is not loose. If fuel is leaking from vent cap, or vent cap is loose, notify unit maintenance IMMEDIATELY.	ANY FUEL LEAKS.
	●					d. Check that manhole fill cover (42) is securely closed (see paragraph 2-16).	Manhole fill cover will not close.
	●					e. Check emergency valve remote trip-release (3) for looseness or damage.	Emergency valve re-note trip-release is damaged or missing
	●					f. Check grounding stud (4) on roadside and curbside overturn rails for looseness or damage, Clean any paint, grease, or dirt on grounding contact surface. If loose or damaged, notify unit maintenance.	Any damage is found that will prevent proper grounding of semitrailer.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
6						**TOP OF SEMITRAILER (Con't)**	
	•					g. Check that vapor vent hose (46) is securely mounted between vapor vent (47) and overturn rail (45). If vapor vent or vapor vent hose are loose or damaged, notify unit maintenance.	
						WARNING **DO NOT open vent cap. With vent cap open, vapors inside tank could ignite if a spark is produced. The resulting fire and explosion will result in serious injury or death to personnel.**	
	•					h. Check for fuel leaks at front vent cap (41). Check that vent cap is not loose. If fuel is leaking from vent cap, or vent cap is loose, notify unit maintenance IMMEDIATELY.	ANY FUEL LEAKS.
	•					i. Check for presence of plugs at front of front dam (40), on roadside and curbside.	

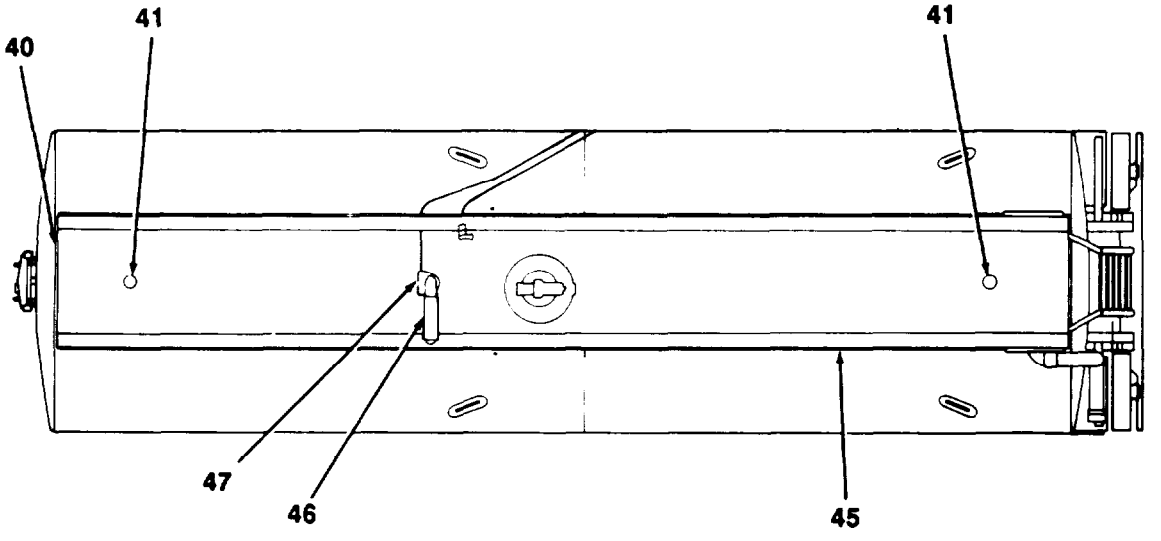
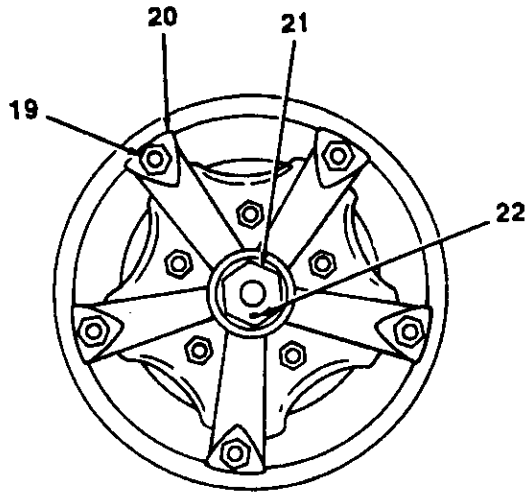


Table. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
7						**CURBSIDE OF SEMITRAILER**	
	•					a. Check for fluid leakage from hubcaps (21) at front and rear wheels.	CLASS III leakage is found.
	•					b. Check level of lubricating oil at hubcaps (21) of front and rear wheels. If level is below fill mark (22), notify unit maintenance.	
	•					c. Check wheel nuts (19) and rim clamps (20) for looseness or damage.	One or more wheel nuts and/or rim clamps are missing.



	•					d. Check tires for cuts, gouges, cracks, or sharp objects. Remove any objects lodged between tire treads or dual wheels.	Tires have cuts, gouges, or cracks that would result in tire failure during operation. Tire missing or unserviceable.
				•		e. Check tires for proper inflation. Inflate tires to 95 psi (655 kPa).	

Table. Unit Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
7						CURBSIDE OF SEMITRAILER (Con't)	
						WARNING **Cautiously feel each wheel hub and drum. Wheel hubs or drums may be hot. Failure to follow this warning may result in burns.**	
			•			f. Cautiously feel each wheel hub and drum. Check for a wheel hub or drum that is hotter or cooler than the others. Overheating could indicate improperly adjusted or defective wheel bearings, or a locked-up brake. A cool wheel hub and drum could indicate an inoperative brake. Report any abnormal conditions to unit maintenance IMMEDIATELY.	
	•					g. Check that chock blocks (49) are present.	
	•					h. Check that transfer hoses and gage stick are present and properly stowed in curbside stowage tubes (48). Check that stowage tube doors close properly at each end.	Transfer hoses are missing. Either stowage tube door is damaged or missing.
	•					i. Check that spare tire (50) is present, in good condition, and securely mounted in spare tire carrier. Ensure that spare tire is inflated to 95 psi (655 kPa)	Spare tire is missing.
	•					j. Check grounding stud (4) on spare tire carrier for looseness or damage. Clean any paint, grease, or dirt on grounding contact surface. If loose or damaged, notify unit maintenance.	Any damage is found that will prevent proper grounding of semitrailer.
	•					k. Check side clearance and marker light (53) and reflector (54) for cleanliness and cracks. Clean any dirty light or reflector lens. If cracked or damaged, notify unit maintenance.	
	•					l. Check that landing gear ground board (51) is present and securely stowed.	
	•					m. Check that curbside fire extinguisher (52) is present, properly covered and secured, and fully charged.	Fire extinguisher is missing or not fully charged.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

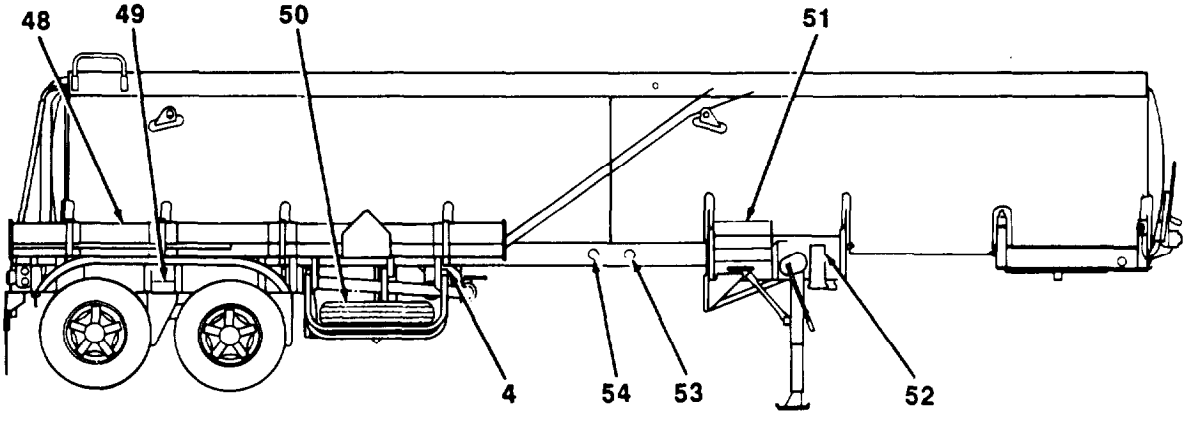
ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
7						**CURBSIDE OF SEMITRAILER (Con't)**	
							
8						**OPERATIONAL CHECKS** **NOTE** • **Make operational checks after coupling semitrailer to tractor (see paragraph 2-12).** • **An assistant operator is required to perform many of the following checks.**	
	•					a. Check landing gear for damage and proper operation.	Landing gear is damaged or will no operate.
	•					b. Check that tractor intervehicular electrical cable and air connections are properly made and secure (see paragraph 2-12).	
	•					c. Check operation of all lights (see TM 9-2320-273-10 or TM 9-2320-283-10).	
		•				d. Test brake system by actuating the service brakes.	Service brakes fail to operate.
		•				e. With semitrailer coupled to tractor, have an assistant actuate the service brakes. Listen for air leaks at air couplings, and at brake valves and air reservoirs.	Air leaks are found.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
8						**OPERATIONAL CHECKS (Con't)**	
		●				f. Push park brake control in on tractor control panel (see TM 9-2320-273-10 or TM 9-2320-283-10). Brake chamber pushrods should retract to release brakes.	Brakes do not release.
		●				g. Pull park brake control out on tractor control panel (see TM 9-2320-273-10 or TM 9-2320-283-10). Brake chamber pushrods should extend to apply brakes.	Brakes do not apply.
		●				h. Note semitrailer brake action for signs of grabbing, pulling to one side, or slow release. Report any problem to unit maintenance IMMEDIATELY.	Brakes do not function properly or semirailer pulls to one side.
		●				i. With tractor moving straight ahead, check if semitrailer wanders or pulls to one side, or if there is any unusual vibration or noises. Report any problem to unit maintenance IMMEDIATELY.	Semitrailer does not rack properly.
						WARNING **Operator must be alert at all times for leaking or malfunctioning equipment. IMMEDIATELY stop all fuel handling operations at first sign of leaks or malfunctions. Corrective action must be performed by qualified personnel before resuming any operations.**	
						NOTE **It is normal for emergency valve and vapor vent control levers to offer resistance when pulled.**	
		●				j. Check that emergency valve and vapor vent control levers operate (see paragraph 2-2).	Control levers will not operate.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) (Con't).

B-Before D-During A-After W-Weekly M-Monthly

ITEM NO.	INTERVAL B	D	A	W	M	ITEM TO BE INSPECTED PROCEDURE: Check for and have Repaired, Filled, or Adjusted as required.	EQUIPMENT IS NOT READY/ AVAILABLE IF:
8						**OPERATIONAL CHECKS (Con't)** **NOTE** **If semitrailer parking/emergency brakes have already been set, brake interlock system will not operate. This is normal.**	
		●				k. Check operation of brake interlock system (see paragraph 1-13). While loading or unloading fuel, check that semitrailer parking/emergency brakes automatically set when loading/ transfer hose is connected to piping assembly front port or rear inlet. Listen for a brief exhausting of air under semitrailer.	Brake interlock system malfunctions.
		●				l. While bottom loading fuel, open precheck valve to activate the precheck cycle. Once emergency valve has closed, resume bottom loading (see paragraph 2-19). If emergency valve does not close within two minutes, or if bottom loading does not resume, refer to troubleshooting instructions in Chapter 3. Report any leakage in precheck system to unit maintenance IMMEDIATELY.	ANY FUEL LEAKS.
		●				m. While loading or unloading fuel, check for fuel leaks at emergency valve, piping assembly, front port, rear inlet, nozzles, and transfer hoses. When bottom loading, check for leaks in precheck tubing and around fittings at pressure gage and precheck valve inside cabinet (see paragraph 1-15). Report any leakage or malfunction to unit maintenance IMMEDIATELY.	ANY FUEL LEAKS.
		●				n. While unloading fuel, pull on emergency valve control lever to close emergency valve BEFORE tank is empty (see paragraph 2-2). Fuel flow should stop after piping is drained. Check to see if fuel continues to flow from butterfly valve at front port (see paragraph 2-2). If fuel continues to flow, emergency valve is malfunctioning. Report any leakage or malfunction to unit maintenance IMMEDIATELY.	ANY FUEL LEAKS Emergency valve malfunctions.

Section III. OPERATION UNDER USUAL CONDITIONS

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2-13	Towing Semitrailer	2-30
2-14	Uncoupling Semitrailer from Tractor	2-31
2-15	Use of Dust Caps	2-33
2-16	Operating Manhole Fill Cover	2-34
2-17	Bonding and Grounding Procedures	2-35
2-18	General Fuel Handling Requirements	2-37
2-19	Bottom Loading (Preferred Method)	2-39
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2-10. GENERAL.

a. This section contains instructions for safely operating the M1062 7500 Gallon Fuel Tank Semitrailer under usual conditions. Unusual operating conditions are defined and described in Section IV of this chapter.

b. DO NOT attempt to operate semitrailer without first reading and becoming familiar with information found in Chapter 1, Section II and in Section I of this chapter,

C. Read and follow all safety regulations found in Chapter 1, Section IV.

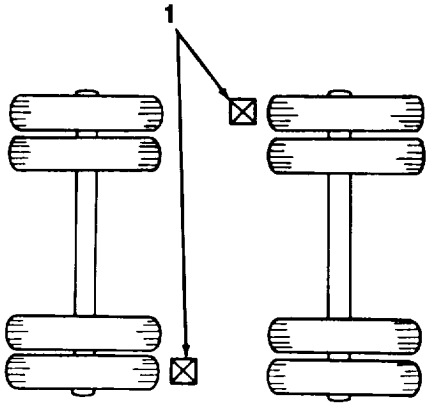
d. Perform all Before (B) PMCS, Table 2-1, before operating semitrailer.

2-11. USE OF CHOCK BLOCKS.

a. There are two chock blocks (1) that are stowed in brackets under fenders (see paragraph 1-7).

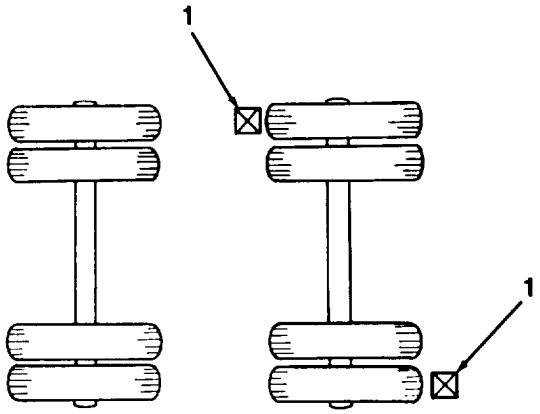
b. To chock the semitrailer wheels, follow these instructions:

(1) If semitrailer is parked on level ground, and neither axle needs to be raised, BOTH axles must be chocked. Place one chock block (1) in front of tire at one end of one axle. Place other chock block in back of tire at other end of other axle.

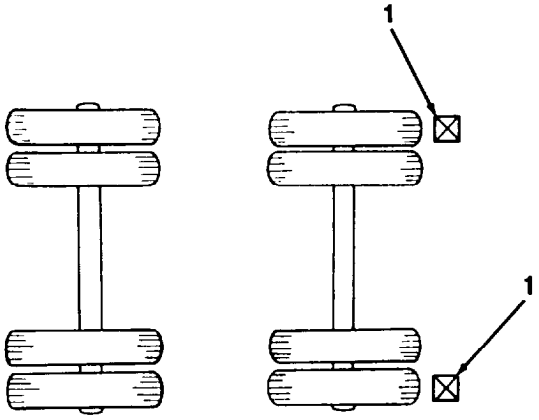


2-11. USE OF CHOCK BLOCKS (Con't).

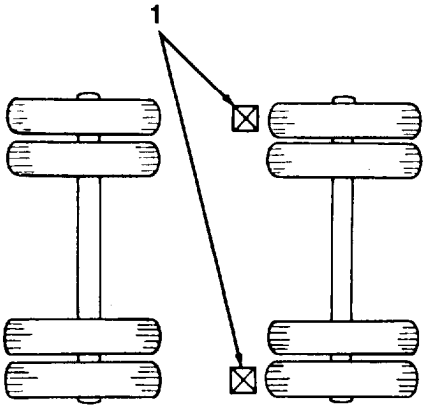
(2) If semitrailer is parked on level ground, and one end of axle or entire axle needs to be raised, axle that remains on ground must be chocked. Place one chock block (1) in front of tire at one end of axle. Place other chock block in back of tire at other end of axle.



(3) If semitrailer is parked on an incline with front of semitrailer facing uphill, place chock blocks (1) in back of tires at each end of one axle.



(4) If semitrailer is parked on an incline with front of semitrailer facing downhill, place chock blocks (1) in front of tires at each end of one axle.



2-12. COUPLING SEMITRAILER TO TRACTOR.

WARNING

All personnel must stand clear of semitrailer and tractor during coupling operation. Failure to follow this warning may result in serious injury or death to personnel.

NOTE

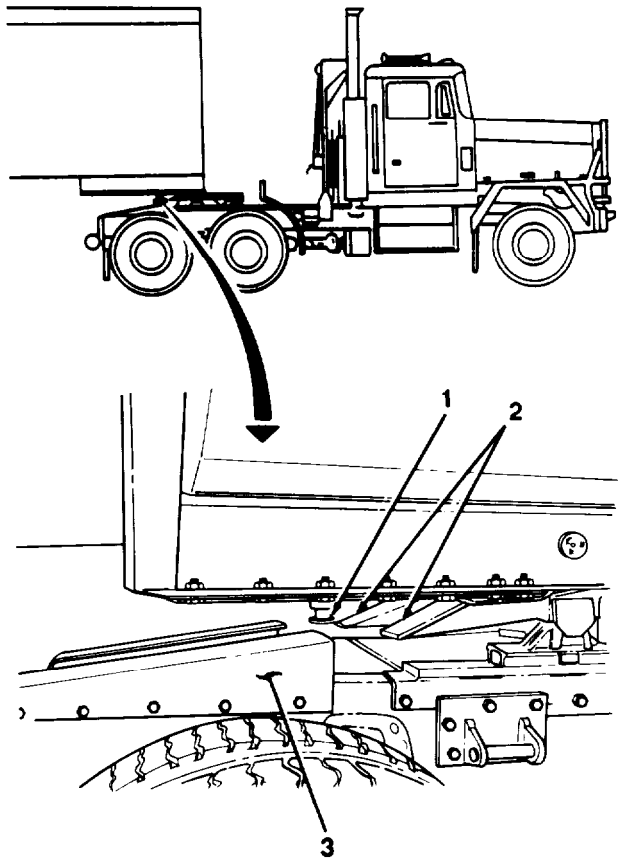
Use a ground guide to assist in coupling operation.

a. Remove chock blocks from stowage brackets and place firmly behind wheels (see paragraph 2-11).

b. Aline tractor with semitrailer. Slowly back up tractor, maintaining alinement of fifth wheel coupler jaws (2) with kingpin (1). Stop tractor before its fifth wheel plate contacts pick-up plate of semitrailer. Recheck alinement.

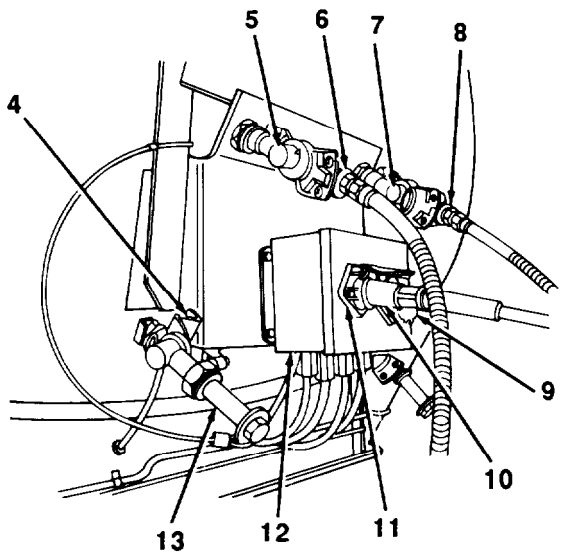
c. Check that kingpin (1) is approximately equal to height of tractor approach ramps (3). If kingpin needs to be raised, have ground guide lower landing gear legs by unstowing handcrank and rotating it clockwise until proper height is reached.

d. Slowly back tractor until fifth wheel coupler jaws (2) engage kingpin (1). Inch forward and check that coupling is locked. If coupling is not locked, rock back and forth until kingpin locks. Visually check coupling. Daylight should not be visible between fifth wheel and kingpin.



2-12. COUPLING SEMITRAILER TO TRACTOR (Con't).

e. Remove dummy couplings (13) from SERVICE and EMERGENCY air couplings (5 and 7) at front of semitrailer. Hang removed dummy couplings to storage brackets (4).



NOTE

SERVICE air couplings are blue, EMERGENCY air couplings are red.

f. Connect tractor SERVICE air coupling (6) to semitrailer SERVICE air coupling (5). Connect tractor EMERGENCY air coupling (8) to semitrailer EMERGENCY air coupling (7).

WARNING

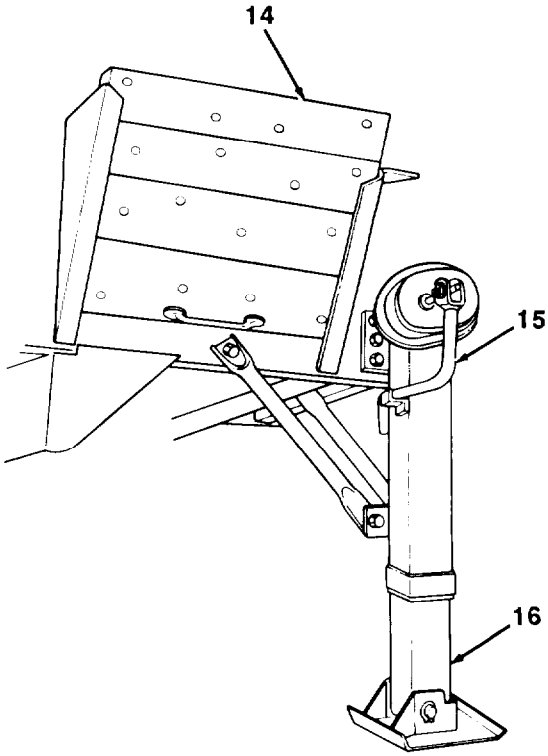
DO NOT plug both intervehicular electrical cables into semitrailer. Failure to follow this warning may result in damage to electrical system or form sparks causing a fire or an explosion.

g. Plug tractor intervehicular electrical cable (10) into electrical connector on cover of semitrailer voltage control unit (12). If tractor uses a 12-volt system, plug into 7-contact electric connector (11). If tractor uses a 24-volt system, plug into 12-contact electrical connector (9).

h. Free handcrank (15) from stowage clip. Rotate handcrank counterclockwise to raise landing gear legs (16) to FULL height. Stow handcrank to stowage clip.

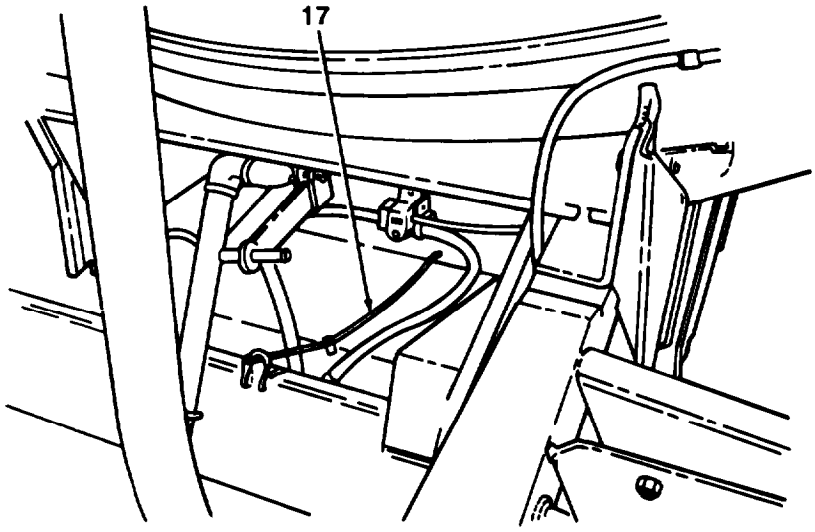
i. If used, stow ground boards (14) in stowage brackets.

j. Remove chock blocks and return them to stowage brackets (see paragraph 2-11).



2-12. COUPLING SEMITRAILER TO TRACTOR (Con't).

k. Pull air reservoir draincock cable (17) and allow all moisture to spray or drain from air reservoirs.



l. Inside tractor, fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

m. Pull tractor forward and check operation of semitrailer brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

NOTE

If semitrailer is connected to 24 V intervehicular electrical cable, turn signal/taillight operates also as stop/taillight. Stop/taillight will not operate.

n. Check operation of all lights (see TM 9-2320-273-10 or TM 9-2320-283-10).

2-13. TOWING SEMITRAILER.

a. DRIVING.

(1) When driving tractor and semitrailer, overall length of unit must be kept in mind when passing other vehicles and when turning.

(2) Turning and backing operations will be affected because the semitrailer and tractor are a hinged unit.

(3) The semitrailer load will affect stopping and overall maneuverability. A partially loaded semitrailer is more unstable than a fully loaded one. This is because fuel surge is more pronounced with a partial load. Always drive semitrailer at safe speeds and make note of any driving irregularities.

2-13. TOWING SEMITRAILER (Con't).

b. TURNING.

(1) When turning corners, allow for semitrailer wheels to turn inside the turning radius of tractor.

(2) To make a right turn at an intersection, drive tractor halfway into intersection, then cut sharply to right. This will allow for semitrailer shorter turning radius and will keep tires off curb.

c. STOPPING.

(1) For safe stopping, apply brakes gradually and smoothly.

(2) During normal operation, apply brakes of tractor and semitrailer at the same time. On steep grades or slippery surfaces, apply semitrailer brakes before tractor brakes. This will help prevent semitrailer from jackknifing or swinging out of line of travel.

(3) Keep brakes on full for a few moments after stopping in the event that braking sequence causes fuel surge inside semitrailer tank.

(4) To ensure optimum braking capability, drain air reservoirs after every eight hours of continuous operation (see paragraph 2-2).

d. PARKING. When tractor and semitrailer combination is to be parked, set parking/ emergency brakes to prevent vehicles from rolling. Place chock blocks in front or behind wheels, as required (see paragraph 2-11).

e. BACKING.

(1) Use a ground guide to ensure safe backing operations.

(2) Adjust all tractor rearview mirrors before backing.

(3) If semitrailer is to be backed to right, turn tractor steering wheel to left (counterclockwise). If semitrailer is to be backed to left, turn tractor steering wheel to right (clockwise).

(4) When semitrailer has turned and backing in a straight line is required, turn tractor wheels in direction semitrailer is moving. This will slowly bring tractor and semitrailer into a straight line.

2-14. UNCOUPLING SEMITRAILER FROM TRACTOR.

WARNING

All personnel must stand clear of semitrailer and tractor during uncoupling operation. Failure to follow this warning may result in serious injury or death to personnel.

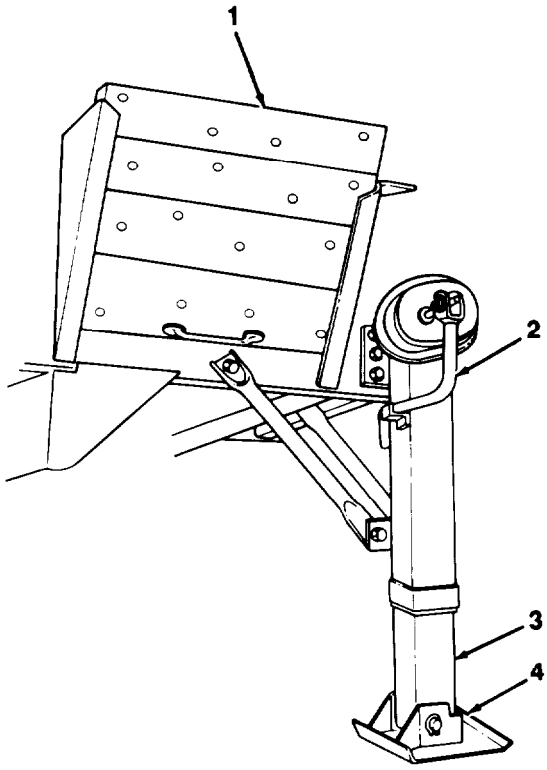
a. Set tractor and semitrailer brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

b. Remove chock blocks from stowage brackets and place firmly in front of wheels (see paragraph 2-11).

2-14. UNCOUPLING SEMITRAILER FROM TRACTOR (Con't).

c. If in muddy, sandy, or snow covered area, remove ground boards (1) from stowage brackets and place on ground directly under landing gear sand shoes (4).

d. To lower landing gear, disengage handcrank (2) from clip on curbside landing gear leg (3), pull out to obtain high speed position, and turn clockwise. After sand shoes (4) contact ground or ground boards (1), push in on handcrank to obtain slow speed position, and turn a few more turns. Stow handcrank in clip.



e. Unplug tractor intervehicular electrical cable (14) from electrical connector on cover of semitrailer voltage control unit (13).

NOTE

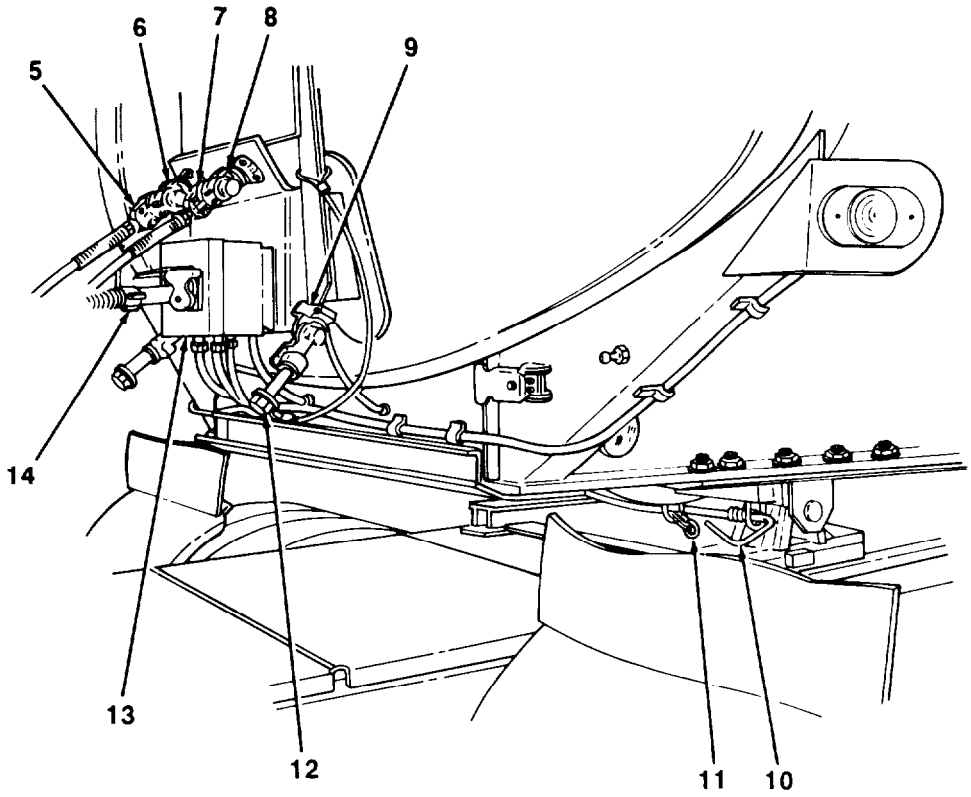
Semitrailer parking/emergency brakes will automatically set when EMERGENCY air coupling (7) is disconnected.

f. Disconnect tractor SERVICE and EMERGENCY air couplings (5 and 7) from semitrailer SERVICE and EMERGENCY air couplings (6 and 8). Remove dummy couplings (12) from storage brackets (9) and install on semitrailer air couplings (6 and 8).

g. Pull outward on tractor's primary release handle (11), then pull outward on secondary release handle (10) until hook releases kingpin.

h. Slowly drive tractor away from semitrailer.

2-14. UNCOUPLING SEMITRAILER FROM TRACTOR (Con't).



2-15. USE OF DUST CAPS.

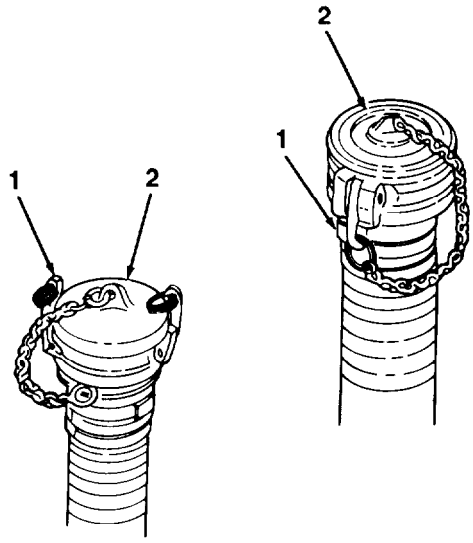
NOTE

Dust caps illustrated are transfer hose dust caps. For location and illustration of front port and vapor collection dust caps, refer to paragraph 2-19. All dust caps are removed the same.

a. Dust caps (2) at piping assembly front port, vapor collection adapter, and transfer hoses form a tight fit over fittings and protect against contamination or leakage.

b. Before a fitting can be used, remove dust cap (2) by pulling outward on ears (1).

c. Always remember to latch dust cap (2) in place after fitting is no longer in use. Push inward on ears (1) to close dust cap.



2-16. OPERATING MANHOLE FILL COVER.

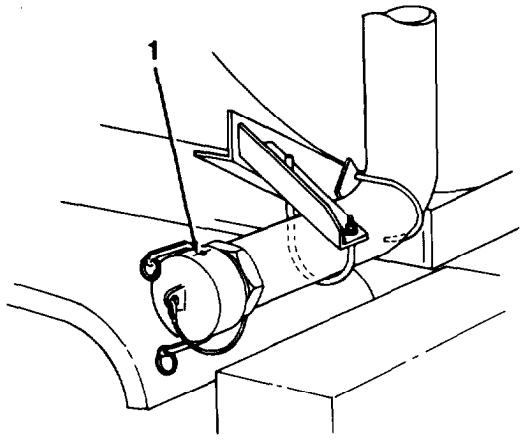
WARNING

- **Stand clear of fill cover (4) when opening manhole. Pressure buildup inside tank may cause fill cover to fly open. Failure to follow this warning may result in serious injury or death to personnel**

- **Use caution when opening manhole primary latch (3). If there is pressure buildup inside tank, it must first be relieved, then manhole primary latch slowly opened. Failure to follow this warning may result in serious injury or death to personnel.**

a. Remove dust cap (1) from vapor collection adapter.

b. Pull vapor vent control lever in cabinet to open (see paragraph 2-2).



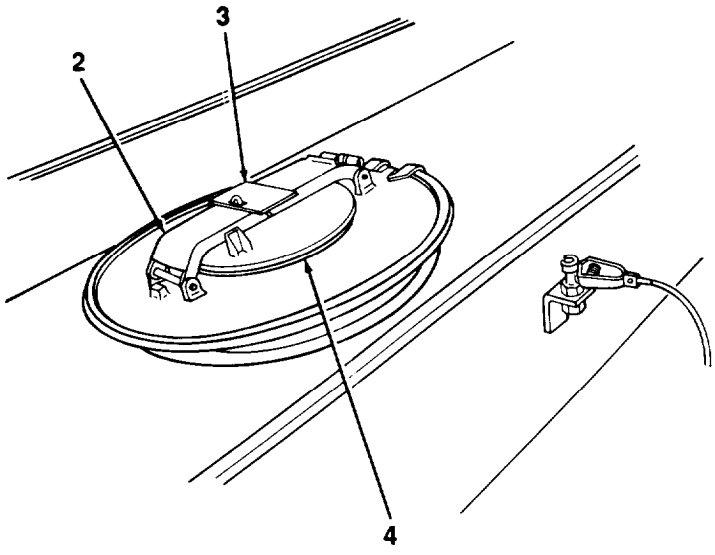
2-16. OPERATING MANHOLE FILL COVER (Con't).

c. Lift primary latch (3) slowly. Pull back on primary latch to release secondary latch on strongback (2). Lift up on strongback and open fill cover (4).

NOTE

Ensure that secondary latch on strongback (2) is engaged in primary latch (3).

d. Close fill cover (4). Firmly press down to engage secondary latch on strongback (2) in tongue of primary latch (3). Listen for a snapping sound. Close primary latch.



e. Push vapor vent control lever in cabinet to close (see paragraph 2-2). Install dust cap (1) at vapor collection adapter.

2-17. BONDING AND GROUNDING PROCEDURES.

a. GENERAL INFORMATION.

(1) Static electricity is created whenever fuel is handled. Static electricity can also be created when maintenance is performed on semitrailer. You cannot prevent static electricity.

(2) Static electricity becomes a danger when it builds into a charge that may form a spark. You can prevent sparks by following proper bonding and grounding procedures.

(3) Bonding is an electrical connection between metallic units, for instance the semitrailer and a fuel terminal facility. Bonding equalizes any static potential that might exist between units.

(4) Grounding is an electrical connection between one or both of the bonded units and ground. Grounding effectively discharges into the earth any static potential that might exist or that might be generated.

(5) If two or more units are bonded and one is grounded, the whole system is effectively grounded.

2-17. BONDING AND GROUNDING PROCEDURES (Con't).

b. SPECIFIC PROCEDURES.

WARNING

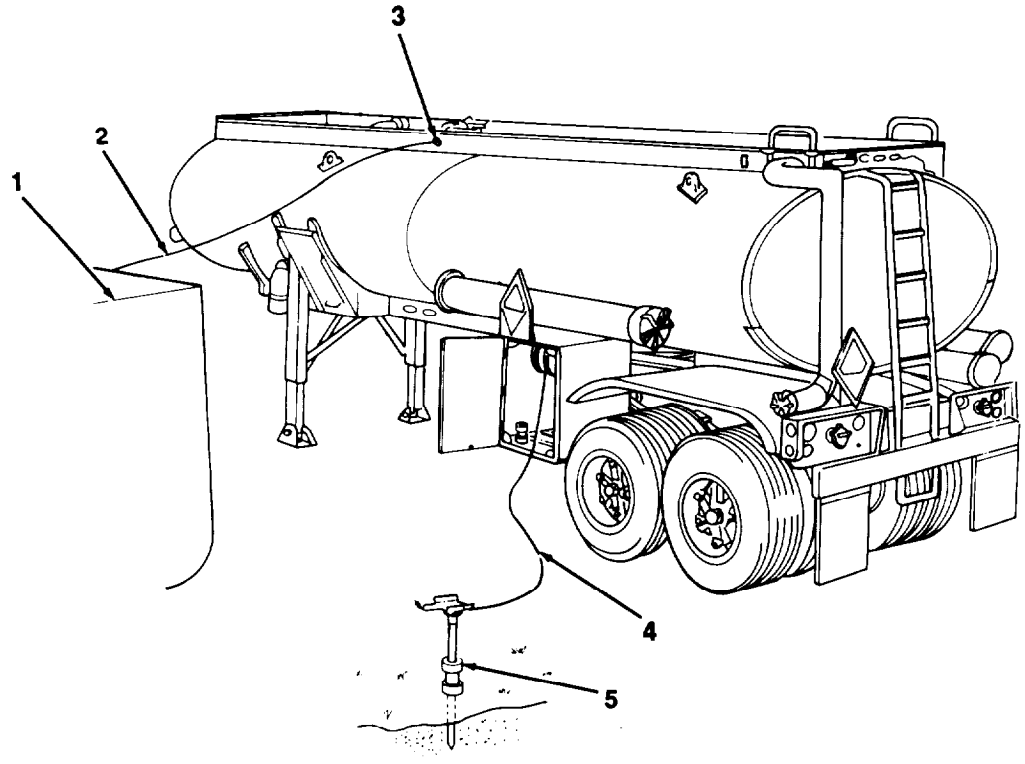
Connect bonding and grounding connection before beginning any fuel handling operation or performing any maintenance on semitrailer. Maintain bonding and grounding connection until after all fuel handling or maintenance is completed. DO NOT connect semitrailer grounding cable (4) to semitrailer grounding stud (3). Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel.

NOTE

Illustration shows typical grounding procedure. For location of all semitrailer grounding studs (3), refer to paragraph 1-7.

(1) If at a facility (1) that has a grounding cable (2), connect facility's grounding cable to one of semitrailer grounding studs (3).

(2) If at a facility (1) that has no grounding cable (2), or if in the field, open cabinet, unwind semitrailer's grounding cable (4) from reel, and firmly attach alligator end clamp to ground rod (5).



2-17. BONDING AND GROUNDING PROCEDURES (Con't).

(3) If semitrailer's portable ground rod is used, remove from roadside stowage tube. Drive portable ground rod well into ground (see FM 10-68).

WARNING

Walk grounding cables (4) back to reels when stowing grounding cables. DO NOT let go of grounding cables until they are fully wound onto reels. Failure to follow this warning may result in serious injury to personnel.

(4) Maintain bonding and grounding connection until after all fuel handling or maintenance is completed. Then disconnect connection. Stow semitrailer's grounding cable (4) and portable ground rod (5), if used.

2-18. GENERAL FUEL HANDLING REQUIREMENTS.

WARNING

- **Follow all fuel handling procedures precisely to prevent serious injury or death to personnel.**
- **DO NOT smoke while loading or unloading fuel, when handling fuel containers, or when located within 50 ft. (15.3 m) of fueling or fuel storage areas. Failure to follow this warning may cause a fire end explosion, resulting in serious injury or death to personnel.**

a. Refer to FM 10-20, FM 10-68, FM 10-69, and FM 10-71 to become familiar with safe fuel handling procedures.

WARNING

DO NOT mix incompatible fuels in tank. Dangerous fumes and explosion may result. Know what fuel was previously carried so that preventive measures may be taken to ensure that harmful or explosive fumes are not released. Failure to follow this warning may result in serious injury or death to personnel.

b. If fuel to be loaded is not the same fuel as previously carried, refer to Table 8-1 in FM 10-71.

c. Personnel engaged in fuel handling must not wear wool, nylon, silk, rayon, or other clothing that generates static electricity. Wear clean cotton clothing with no metal zippers. Remove all contents from pockets. Wear rubber boots and gloves to keep fuel off skin. Use cotton cloths for cleaning purposes. Before climbing onto semitrailer, grasp static ground wire to discharge all static from body.

d. Keep tractor and semitrailer coupled during fuel handling operations to ensure that vehicles can be moved quickly in an emergency.

e. Ensure that cabinet door remains open during all fuel handling operations.

e.1. Ensure that hazardous materials placards reflect proper grade of fuel being carried.

2-18. GENERAL FUEL HANDLING REQUIREMENTS (Con't).

WARNING

Operator must be alert at all times for leaking or malfunctioning equipment. IMMEDIATELY stop all fuel handling operations at first sign of leaks or malfunctions. Corrective action must be performed by qualified personnel before resuming any operations.

f. IMMEDIATELY stop all fuel handling operations at first sign of leaks or malfunctions.

g. **IN CASE OF AN EMERGENCY,** to stop fuel flow, close emergency valve by:

(1) pushing emergency valve control lever in cabinet, or

(2) pulling remote trip-release at front roadside of tank, or

(3) pulling remote trip-release ahead of manhole, or

(4) closing cabinet door.

For location of these components refer to paragraph 2-2.

h. When loading fuel, bottom load whenever possible. Top load only when bottom loading is not possible. Top loading causes more static electricity and vapors than bottom loading and the chance of a fire is greater. Top loading pollutes the environment because the vapor collection system is not used.

i. IMMEDIATELY wipe up fuel spills with cotton waste material and dispose of in closed metal containers.

j. IMMEDIATELY wash with soap and water if you get fuel on your skin.

k. To remove fuel-soaked clothes follow these steps:

(1) First wet your clothes with water.

(2) If water is not available, temporarily ground yourself by holding a piece of grounded equipment with your hands.

(3) Remove your hands from grounded equipment and take off your clothes. This grounding action removes danger of a static spark igniting your clothes.

l. Man all discharge nozzles and loading arms to avoid fuel spillage. DO NOT exceed loading/unloading rates (see paragraph 1-11).

m. Two 14 ft. (4.3 m) long transfer hoses stowed in curbside stowage tube may be used as required when added hose length is needed during fuel loading or unloading (see paragraph 1-7, Curbside View).

n. When fuel is to be loaded into a source which cannot accept higher fuel flow rates afforded by a 4 in. hose, use either 4-3 in. (10.2-7.6 mm) reducer stowed in cabinet, as needed.

o. If fire extinguishers are discharged for any reason, have qualified personnel recharge them before next mission. The semitrailer is not mission-ready with missing or discharged fire extinguishers.

p. When bottom loading or unloading, connect fuel terminal facility's vapor collection hose to semitrailer vapor collection system.

2-18. GENERAL FUEL HANDLING REQUIREMENTS (Con't).

q. When bottom or top loading, keep emergency valve CLOSED.

r. When bottom loading or unloading, keep vapor vent OPEN.

s. When bottom loading, activate the precheck cycle to check for proper operation of automatic shut-off (jet level sensor) circuit (see paragraph 2-19).

t. If a malfunction in automatic shut-off (jet level sensor) circuit causes semitrailer to not bottom load, automatic shut-off circuit can be bypassed and semitrailer manually bottom loaded by:

(1) pulling emergency valve control lever to open emergency valve (see paragraph 2-2), and

(2) positioning observer at manhole opening to alert fuel handler when tank is to capacity.

When mission is complete, notify unit maintenance to troubleshoot the malfunction.

u. Make sure hazardous materials placards reflect the grade of the fuel being hauled in the semitrailer.

2-19. BOTTOM LOADING (PREFERRED METHOD).

a. *TO BOTTOM LOAD AT REAR INLET.*

WARNING

DO NOT smoke while loading or unloading fuel, when handling fuel containers, or when located within 50 ft. (15.3 m) of fueling or fuel storage areas. Failure to follow this warning may cause a fire and explosion, resulting in serious injury or death to personnel.

(1) Shut down tractor engine and set tractor and semitrailer parking/emergency brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

(2) Remove fire extinguishers from mounting brackets and take to point of operation.

(3) Open cabinet door. Secure door in open position with door prop.

WARNING

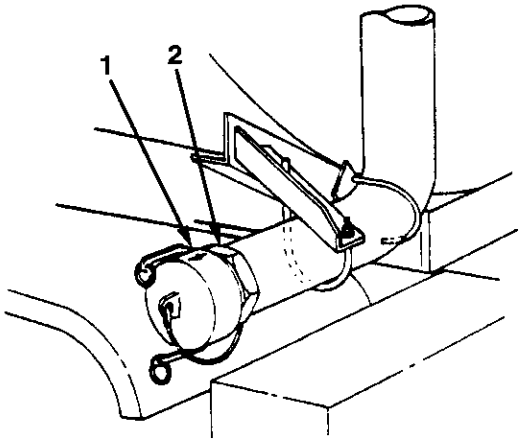
Connect bonding and grounding connection before beginning any fuel handling operation. Maintain bonding and grounding connection until after fuel handling is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded or ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel.

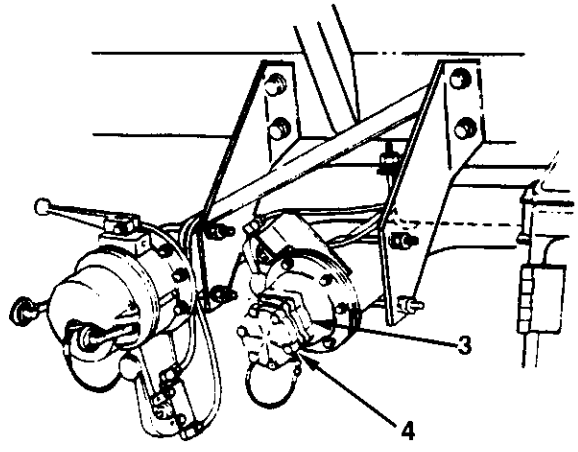
(4) Connect bonding and grounding connection (see paragraph 2-17).

2-19. BOTTOM LOADING (PREFERRED METHOD) (Con't).

(5) Remove dust cap (1) and connect fuel terminal facility's vapor collection hose to adapter (2).

(6) Push down and rotate rear inlet cover (4) counterclockwise to open. Connect fuel terminal facility's loading hose to rear inlet bayonet fitting (3).

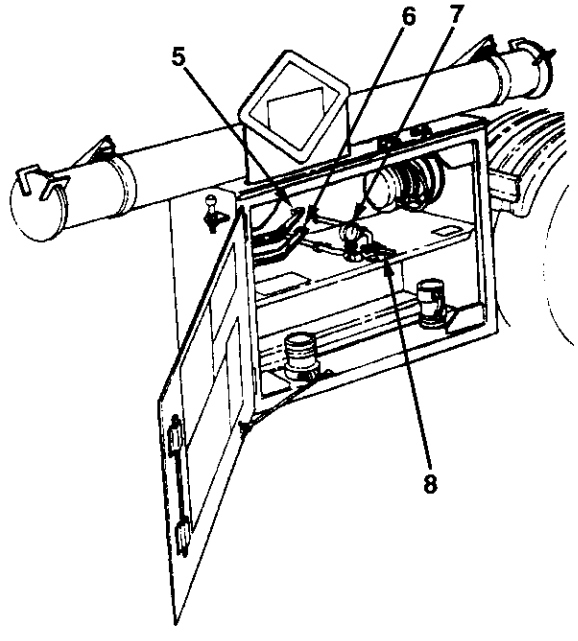




WARNING

DO NOT open emergency valve when bottom loading. Automatic shut-off of fuel flow, controlled by jet level sensor, will not function with emergency valve open. Failure to follow this warning will result in uncontrolled fuel spillage and danger of fire and explosion.

(7) Pull vapor vent control lever (6) in cabinet to open vent. DO NOT pull emergency valve control lever (5).



CAUTION

When bottom loading, pressure must be controlled so as NOT to exceed 50 psi (345 kPa) on pressure gage (7). Failure to follow this caution may cause leaks in bottom loading system.

(8) Begin to load fuel.

2-19. BOTTOM LOADING (PREFERRED METHOD) (Con't).

NOTE

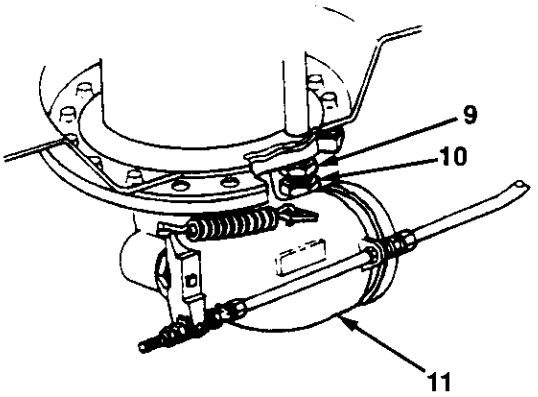
When bottom loading a new semitrailer for the first time, or when bottom loading for first time after tank has been purged, perform steps 9 through 12 to bleed air from lines between jet level sensor and emergency valve. Fuel cannot be bottom loaded with air in lines.

(9) Place an empty gallon container on top of rear axle under bleeder valve (9).

(10) At emergency valve (11), remove nut (10) at bleeder valve (9).

(11) Wait until gallon container is 1/2 to 3/4 full and liquid flow from bleeder valve (9) is a steady stream of fuel.

(12) Install nut (10) on bleeder valve (9). Fuel flow into tank will begin.



NOTE

Precheck cycle should be activated once tank is bottom loading steadily. Pressure gage (7) will read 5-15 psi (34-103 kPa).

(13) Turn handle of precheck valve (8) 1/4 turn counterclockwise to open valve and activate precheck cycle.

NOTE

When emergency valve closes, a screeching sound may be heard. Pressure gage (7) reading will rise to 35-50 psi (241-345 kPa).

(14) Jet level sensor is functioning properly if emergency valve closes within two minutes and fuel flow into tank stops. If emergency valve does not close within two minutes, shut down fuel flow and perform troubleshooting (see Table 3-1).

(15) To resume bottom loading, turn handle of precheck valve (8) 1/4 turn clockwise to deactivate precheck cycle. If fuel flow into tank does not resume, shut down fuel flow and perform troubleshooting (see Table 3-1).

(16) When loading is complete, shut down fuel supply and push vapor vent control lever (6) in cabinet to close vent.

(17) Disconnect fuel terminal facility's vapor collection hose from adapter (2). Install dust cap (1).

(18) Drain fuel from fuel terminal facility's loading hose, if necessary. Disconnect fuel terminal facility's loading hose from rear inlet bayonet fitting (3).

(19) Install cover (4) on rear inlet bayonet fitting by pushing down and rotating clockwise.

2-19. BOTTOM LOADING (PREFERRED METHOD) (Con't).

WARNING

Walk grounding cables back to reels when stowing grounding cables. DO NOT let go of grounding cables until they are fully wound onto reels. Failure to follow this warning may result in serious injury to personnel.

(20) Disconnect bonding and grounding connection. Stow grounding cables and ground rod (paragraph 2-17), if used. Close cabinet door.

(21) Stow fire extinguishers.

b. *TO BOTTOM LOAD AT FRONT PORT.*

WARNING

DO NOT smoke while loading or unloading fuel, when handling fuel containers, or when located within 50 ft. (15.3 m) of fueling or fuel storage areas. Failure to follow this warning may cause a fire and explosion, resulting in serious injury or death to personnel.

(1) Shut down tractor engine and set tractor and semitrailer parking/emergency brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

(2) Remove fire extinguishers from mounting brackets and take to point of operation.

(3) Open cabinet door. Secure door in open position with door prop.

WARNING

Connect bonding and grounding connection before beginning any fuel handling operation. Maintain bonding and grounding connection until after all fuel handling is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could cause a spark. The resulting explosion will cause serious injury or death to personnel.

(4) Connect bonding and grounding connection (see paragraph 2-17).

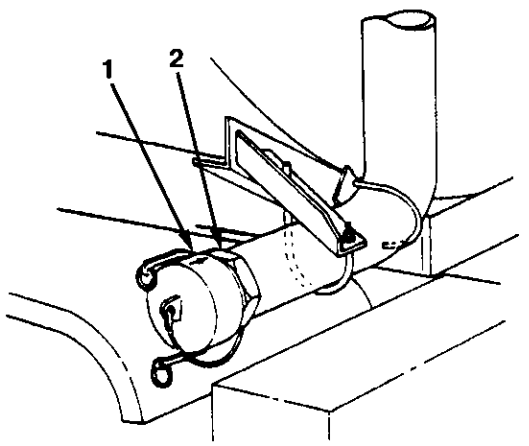
2-19. BOTTOM LOADING (PREFERRED METHOD) (Con't).

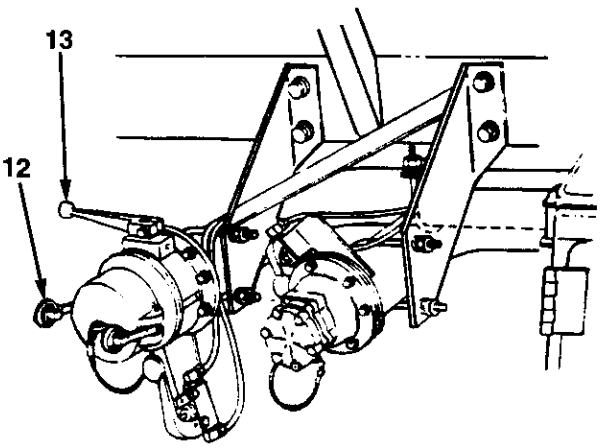
(5) Remove dust cap (1) and connect fuel terminal facility's vapor collection hose to adapter (2).

NOTE

When fueling at commercial facilities, use commercial pressure fuel adapter assembly (see Appendix D, Additional Authorization List).

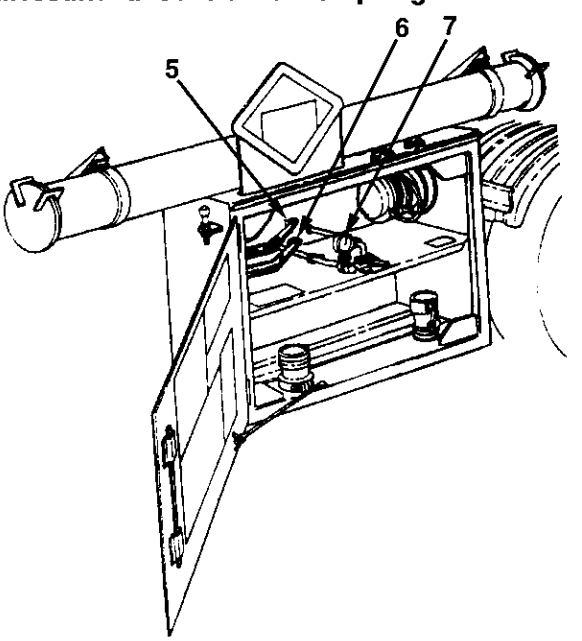
(6) Remove dust cap (12) and connect pressure fuel adapter (if used) and fuel terminal facility's loading hose to front port camlock fitting. If loading hose will not reach, connect transfer hoses stowed in curbside stowage tubes, as required.





WARNING

DO NOT open emergency valve when bottom loading. Automatic shut-off of fuel flow, controlled by jet level sensor, will not function with emergency valve open. Failure to follow this warning will result in uncontrolled fuel spillage and danger of fire and explosion.



(7) Pull vapor vent control lever (6) in cabinet to open vent. DO NOT pull emergency valve control lever (5).

(8) Turn butterfly valve (13) 1/4 turn counterclockwise to open.

CAUTION

When bottom loading, pressure must be controlled so as NOT to exceed 50 psi (345 kPa) on pressure gage (7). Failure to follow this caution may cause leaks in bottom loading system.

(9) Begin to load fuel.

2-19. BOTTOM LOADING (PREFERRED METHOD) (Con't).

NOTE

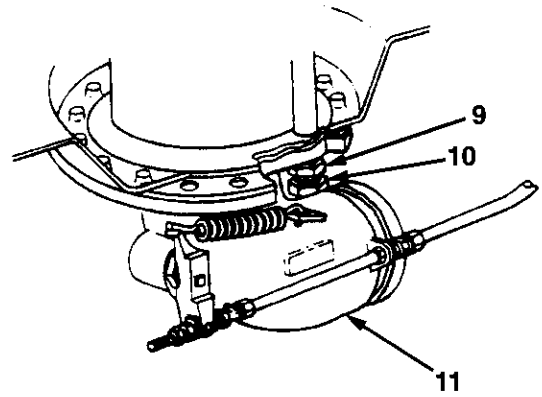
When bottom loading a new semitrailer for the first time, or when bottom loading for the first time after tank has been purged, perform steps 10 through 13 to bleed air from the lines between jet level sensor and emergency valve. Fuel cannot be bottom loaded with air in lines.

(10) Place an empty gallon container on top of rear axle under bleeder valve (9).

(11) At emergency valve (11), remove nut (10) at bleeder valve (9).

(12) Wait until gallon container is 1/2 to 3/4 full and liquid flow from bleeder valve (9) is a steady stream of fuel.

(13) Install nut (10) on bleeder valve (9). Fuel flow into tank will begin.



NOTE

Precheck cycle should be activated once tank is bottom loading steadily. Pressure gage (7) will read 5-15 psi (34-103 kPa).

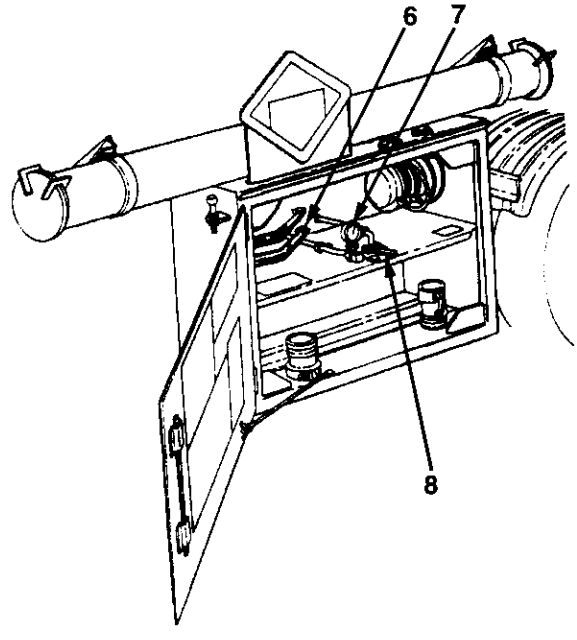
(14) Turn handle of precheck valve (8) 1/4 turn counterclockwise to open valve and activate precheck cycle.

NOTE

When emergency valve closes, a screeching sound may be heard. Pressure gage (7) reading will rise to 35-50 psi (245-345 kPa).

(15) Jet level sensor is functioning properly if emergency valve closes within two minutes and fuel flow into tank stops. If emergency valve does not stop within two minutes, shut down fuel flow and perform troubleshooting (see Table 3-1).

(16) To resume bottom loading, turn handle of precheck valve (8) 1/4 turn clockwise to deactivate precheck cycle. If fuel flow into tank does not resume, shut down fuel flow and perform troubleshooting (see Table 3-1).



2-19. BOTTOM LOADING (PREFERRED METHOD) (Con't).

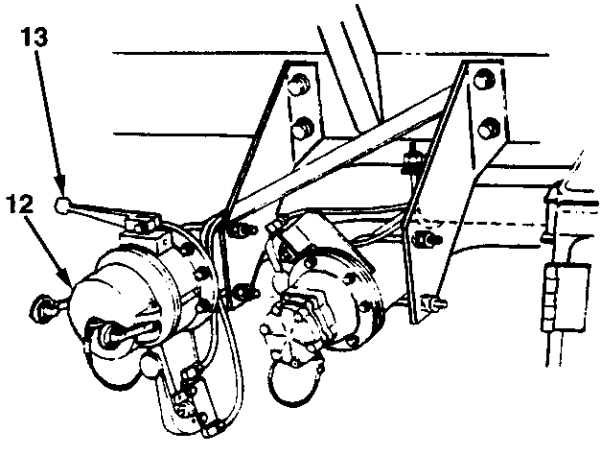
(17) When loading is complete, turn butterfly valve (13) 1/4 turn clockwise to close. Shut off fuel supply.

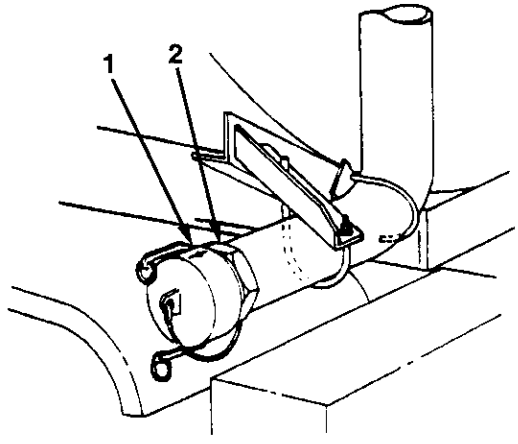
(18) Push vapor vent control lever (6) in cabinet to close vent.

(19) Disconnect fuel terminal facility vapor collection hose from adapter (2). Install dust cap (1).

(20) Drain any residual fuel from fuel terminal facility's loading hose. Drain transfer hoses if transfer hoses were used.

(21) Disconnect fuel terminal facility loading hose and pressure fuel adapter, if adapter was used, from front port camlock fitting. Install dust cap (12). Drain transfer hose, if transfer hose was used. Stow transfer hose if used.





WARNING

Walk grounding cables back to reels when stowing grounding cables. DO NOT let go of grounding cables until they are fully wound onto reels. Failure to follow this warning may result in serious injury to personnel.

(22) Disconnect bonding and grounding connection (see paragraph 2-17). Stow grounding cables and ground rod, if used.

(23) Close cabinet door and stow fire extinguishers.

2-20. TOP LOADING (ALTERNATE METHOD).

WARNING

DO NOT smoke while loading or unloading fuel, when handling fuel containers, or when located within 50 ft. (15.3 m) of fueling or fuel storage areas. Failure to follow this warning may cause a fire and explosion, resulting in serious injury or death to personnel.

a. Shut down tractor engine and set tractor and semitrailer parking/emergency brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

2-20. TOP LOADING (ALTERNATE METHOD) (Con't).

b. Remove fire extinguishers from mounting brackets and take to point of operation.

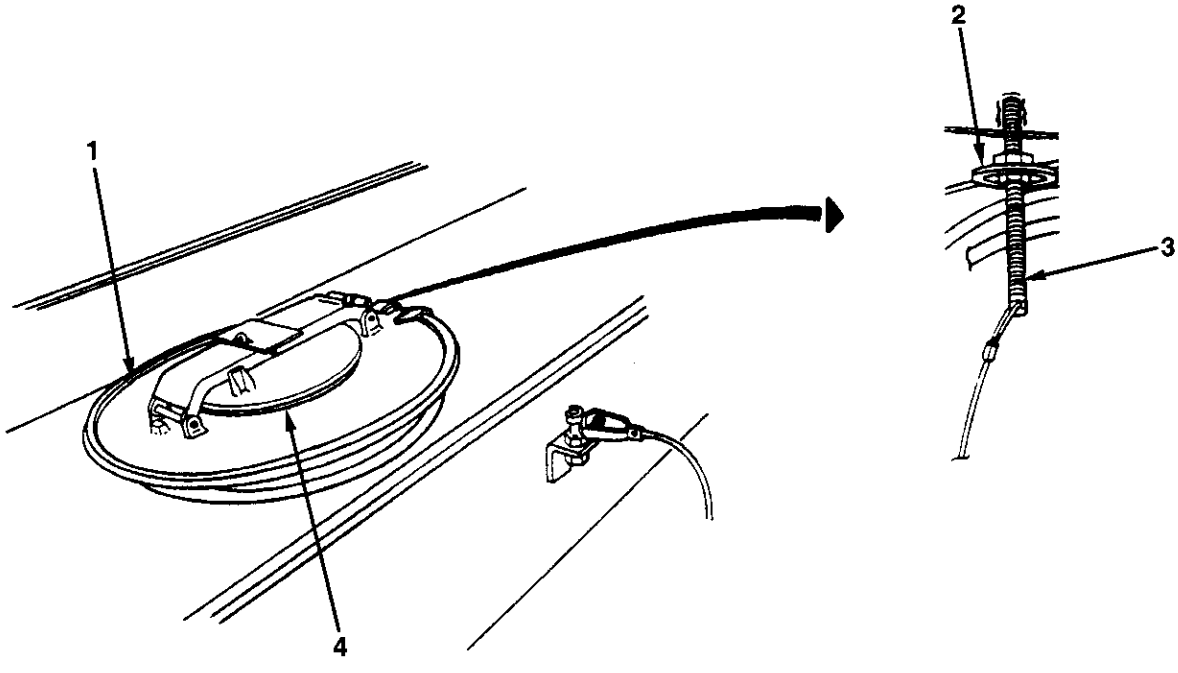
c. Open cabinet door. Secure door in open position with door prop.

WARNING

Connect bonding and grounding connection before beginning any fuel handling operation. Maintain bonding and grounding connection until after all fuel handling is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause injury or death to personnel.

d. Connect bonding and grounding connection (see paragraph 2-17).

e. If loading hose will not reach manhole (1), connect transfer hoses stowed in curbside stowage tubes, as required.



2-20. TOP LOADING (ALTERNATE METHOD) (Con't).

WARNING

- **Grabhandles on top of semitrailer are dismountable. Ensure that they are securely mounted before using them. Failure to follow this warning may result in serious injury to personnel.**
- **Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.**
- **Use caution when opening manhole primary latch. If there is pressure buildup inside tank, it must first be relieved, then manhole primary latch slowly opened. Failure to follow this warning may result in serious injury to personnel.**
- **Stand clear of fill cover (4) when opening manhole (1). Pressure buildup inside tank may cause fill cover to fly open. Failure to follow this warning may result in serious injury or death to personnel.**

f. Open fill cover (4) on manhole (1) (see paragraph 2-16).

NOTE

To reduce vapors and static electricity, loading/transfer hose should be placed as close to bottom of tank as possible.

g. Lower loading hose or transfer hose through fill opening and place as close to bottom of tank as possible. Be careful not to damage jet level sensor.

WARNING

- **DO NOT breathe fuel fumes. They are toxic and can cause serious medical problems. Failure to follow this warning may result in serious injury or death to personnel.**
- **Give IMMEDIATE medical attention to personnel exposed to hydrocarbon or toxic vapors. Signs of distress are weakness, nausea, coughing or intoxication, nosebleed or cramps, or other unusual symptoms. Qualified personnel able to administer artificial respiration and simple first aid must be present.**

h. Load fuel. While loading, watch disk (2) on gage marker rod (3) to determine fuel level in tank. DO NOT overfill.

i. When loading is complete, close and latch fill cover (4) on manhole (1) (see paragraph 2-16).

j. Drain and disconnect loading hose and transfer hoses, if used. Stow transfer hoses if used.

WARNING

Walk grounding cables back to reels when stowing grounding cables. DO NOT let go of grounding cables until they are fully wound onto reels. Failure to follow this warning may result in serious injury to personnel.

k. Disconnect bonding and grounding connection. Stow grounding cables and semitrailer ground rod, if used.

2-20. TOP LOADING (ALTERNATE METHOD) (Con't).

l. Close cabinet door.

m. Stow fire extinguishers.

2-21. UNLOADING FUEL.

WARNING

DO NOT smoke while loading or unloading fuel, when handling fuel containers, or when located within 50 ft. (15.3 m) of fueling or fuel storage areas. Failure to follow this warning may cause a fire and explosion, resulting in serious injury or death to personnel.

a. Shut down tractor engine and set tractor and semitrailer parking/emergency brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

b. Remove fire extinguishers from mounting brackets and take to point of operation.

c. Open cabinet door. Secure door in open position with door prop.

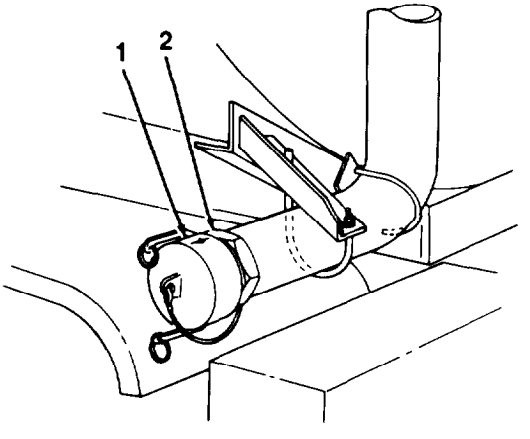
WARNING

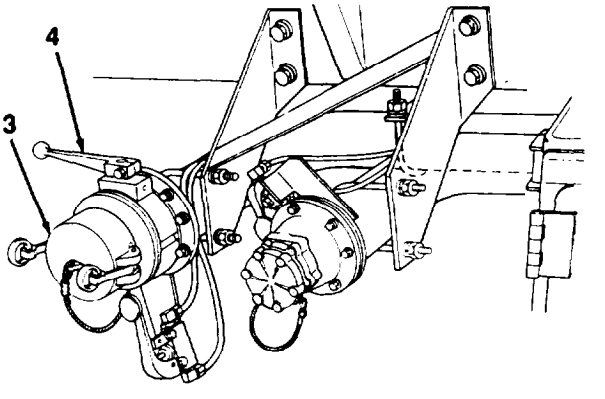
Connect bonding and grounding connection before beginning any fuel handling operation. Maintain bonding and grounding connection until after all fuel handling is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel.

d. Connect bonding and grounding connection (see paragraph 2-17).

e. Remove dust cap (1) and connect fuel terminal facility vapor collection hose to adapter (2).

f. If discharge hose does not reach facility which is receiving fuel, connect transfer hoses stowed in curbside stowage tube, as needed. Remove dust cap (3) from front port. Connect discharge hose from source receiving fuel to front port camlock fitting.





2-21. UNLOADING FUEL (Con't).

g. Pull vapor vent control lever (6) in cabinet to open vapor vent.

h. Pull emergency valve control lever (5) in cabinet to open emergency valve.

i. Turn butterfly valve (4) ¼ turn counterclockwise to open. Unload fuel.

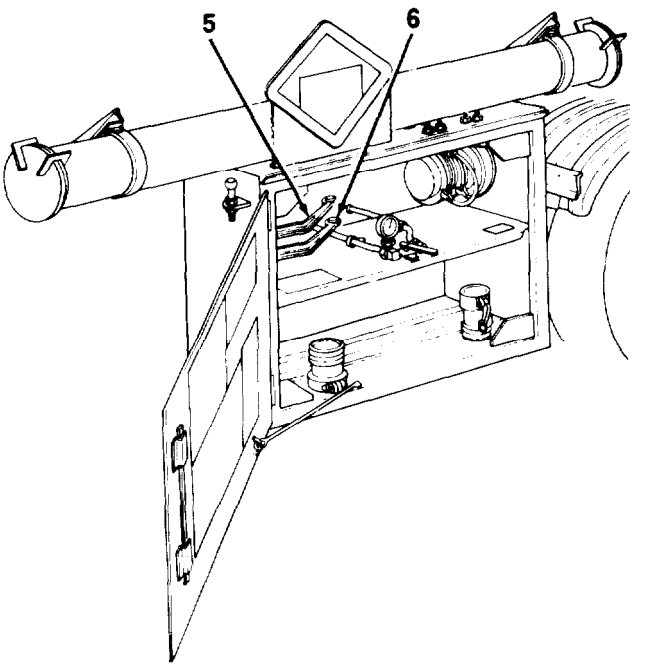
j. When unloading is complete, push emergency valve control lever (5) in cabinet to close emergency valve.

k. Push vapor vent control lever (6) in cabinet to close.

I. Drain discharge hose and transfer hoses, if used. Turn butterfly valve (4) ¼ turn clockwise to close.

m. Disconnect discharge hose from front port camlock fitting. If used, disconnect transfer hoses and stow. Install dust cap (3) to front port.

n. Disconnect fuel terminal facility vapor collection hose from adapter (2). Install dust cap (1).



WARNING

Walk grounding cables back to reels when stowing grounding cables. DO NOT let go of grounding cables until they are fully wound onto reels. Failure to follow this warning may result in serious injury to personnel.

o. Disconnect bonding and grounding connection. Stow grounding cables and semitrailer round rod, if used.

p. Close cabinet door.

q. Stow fire extinguishers.

2-22. REMOVAL AND INSTALLATION OF GRABHANDLE.

a. *REMOVAL.*

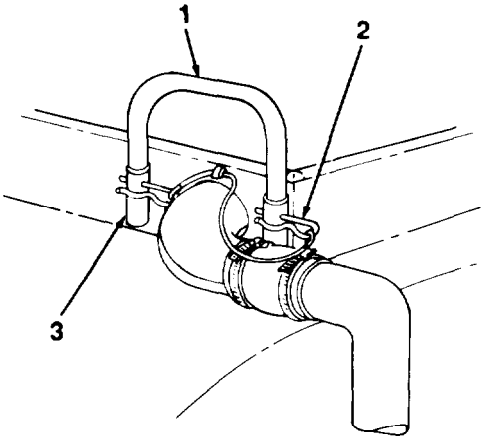
(1) Remove two lockpins (2) from holes in two mounting brackets (3) and grabhandle (1).

(2) Remove grabhandle (1).

b. *INSTALLATION.*

(1) Slide grabhandle (1) inside two mounting brackets (3).

(2) Aline holes and install two lockpins (2).



2-23. USE OF CONVOY WARNING LIGHT.

a. *INSTALLATION.*

WARNING

- **Grabhandles on top of semitrailer are dismountable. Ensure that they are securely mounted before using them. Failure to follow this warning may result in serious injury to personnel.**
- **Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.**

(1) Unstow lockpin (8) by removing from holes in mounting bracket (9).

(2) Slide holder tube of convoy warning light (1) into mounting bracket (9). Rotate convoy warning light so that cable (2) can reach receptacle (7) with cable routed to outside of grabhandle (3). Aline holes in holder tube and mounting bracket, and install lockpin (8).

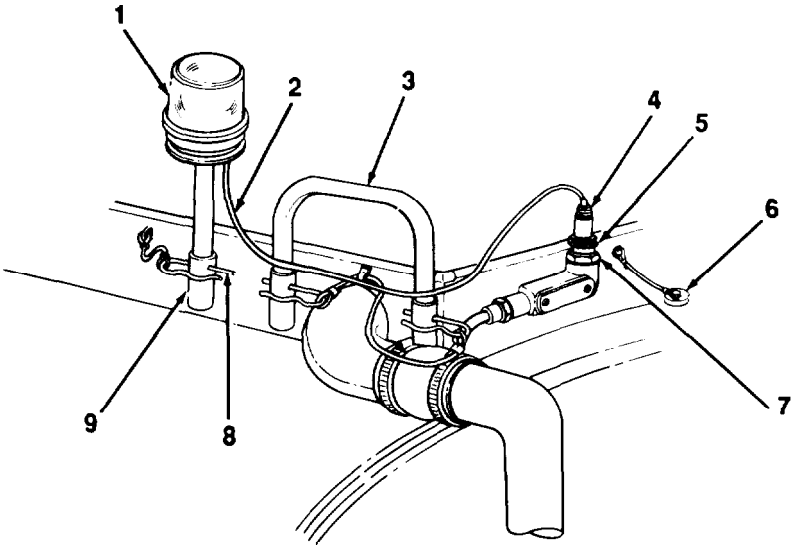
(3) Remove cap (6) from receptacle (7). Remove cap from cable plug (4).

(4) Install cable plug (4) into receptacle (7) alining cable plug with slot in receptacle. Tighten ring (5) to secure connection.

(5) Install cap of cable plug (4) into cap (6) of receptacle (7) to help keep cap threads clean.

(6) Turn on convoy warning light toggle switch (see paragraph 2-2).

2-23. USE OF CONVOY WARNING LIGHT (Con't).



b. *REMOVAL.*

(1) Turn off convoy warning light toggle switch (see paragraph 2-2).

WARNING

- **Grabhandles on top of semitrailer are dismountable. Ensure that they are securely mounted before using them. Failure to follow this warning may result in serious injury to personnel.**
- **Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.**

(2) Remove cap of cable plug (4) from cap (6) of receptacle (7).

(3) Untighten ring (5). Remove cable plug (4) from receptacle (7).

(4) Install cap on cable plug (4). Install cap (6) on receptacle (7).

(5) Remove lockpin (8) from mounting bracket (9) and holder tube of convoy warning light (1).

(6) Remove convoy warning light (1) from mounting bracket (9).

(7) Stow lockpin (8) by installing through holes in mounting bracket (9).

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

Paragraph Number	Title	Page Number
2-24	General	2-52
2-25	Operation in Extreme Cold or Snow	2-52
2-26	Operation in Extreme Heat	2-53
2-27	Operation in Dusty or Sandy Areas	2-53
2-28	Operation in Areas of High Humidity, Heavy Rain, and Saltwater	2-53
2-29	Fording Operations	2-53

2-24. GENERAL.

a. This section contains instructions for safely operating the M1062 7500 Gallon Fuel Tank Semitrailer under unusual conditions. In addition to normal preventive maintenance service, special care must be taken to keep the semitrailer mission capable in extremes of temperature and humidity.

b. For information on special driving instructions under unusual conditions, refer to FM 21-305.

c. For information on operation in cold weather, refer to FM 9-207.

d. For information on operation in extreme heat or dusty, sandy conditions, refer to FM 90-3.

2-25. OPERATION IN EXTREME COLD OR SNOW.

WARNING

Extreme cold is hazardous to personnel. Avoid prolonged exposure to cold weather and wear protective clothing and gloves. Avoid touching metal surfaces with bare skin. Pay attention to first signs of frostbite. If exposed skin comes in contact with fuel, frostbite can occur suddenly. If frostbite occurs, immediately seek medical assistance.

a. Personnel operating or maintaining semitrailer in extreme cold or snow must be aware at all times of dangers of frostbite.

b. Generally, operation in extreme cold causes lubricants to thicken or freeze and various semitrailer components to become hard and brittle, and therefore easily damaged or broken. Cold weather also causes electrical short circuits. The operator must be alert to effects of extreme cold on semitrailer.

c. When halted or parked, clean ice, snow, or mud from underneath semitrailer and from hoses, lines, tubes, and electrical connections.

d. Keep tires inflated to 95 psi (655 kPa).

e. When halted for short shutdown periods, park semitrailer in a sheltered spot out of wind. If shelter is not available, park semitrailer with its rear facing into wind.

f. When halted for long shutdown periods, if high and dry ground is not available, prepare a footing of planks or brush.

2-25. OPERATION IN EXTREME COLD OR SNOW (Con't).

g. Be cautious when placing semitrailer in motion after a shutdown. Thickened lubricants may cause failure of components. Free frozen brake shoes, or tires frozen to ground, with care.

2-26. OPERATION IN EXTREME HEAT.

a. If possible, park semitrailer under cover to protect it from sun, sand, and dust.

CAUTION

DO NOT use gasoline or dry cleaning solvent to remove oil or grease spots from tarpaulin. Use only water and a scrubbing brush. Failure to follow this caution will damage tarpaulin.

b. Cover inactive semitrailer with tarpaulins if no other shelter is available. Tarpaulins are subject to deterioration from mildew or attacks by insects or animals. Weekly, shake out and air tarpaulins for several hours. Clean mildewed tarpaulin with a dry scrubbing brush. DO NOT clean with water until mildew is removed. If mildew is found, examine tarpaulin to determine if it is rotted or weakened. Replace tarpaulin, if damaged. If not damaged, treat tarpaulin as outlined in FM 10-16.

c. Semitrailers, inactive for long periods in hot and humid weather, are subject to rusting and accumulation of fungi growth. Frequently inspect, clean, and lubricate to prevent deterioration.

2-27. OPERATION IN DUSTY OR SANDY AREAS.

a. When uncoupling semitrailer in sandy areas, use ground boards placed under sand shoes to prevent landing gear from sinking.

b. Frequently inspect, clean, and lubricate to prevent damage to semitrailer components due to contamination from sand (see Chapter 3, Section I).

2-28. OPERATION IN AREAS OF HIGH HUMIDITY, HEAVY RAIN, AND SALTWATER.

a. When uncoupling semitrailer in muddy areas, use ground boards placed under sand shoes to prevent landing gear from sinking.

b. Dampness increases chances of corrosion. Inspect all surfaces and electrical connections for signs of corrosion. Remove any signs of corrosion. Apply corrosion preventive compound (Item 7, Appendix E) to all electrical connections.

c. Wash semitrailer thoroughly with clear water if it comes in contact with saltwater.

2-29. FORDING OPERATIONS.

a. Semitrailer is capable of saltwater or fresh-water fording to a depth of 20 in. (50.8 cm) without any special servicing or protection required before fording.

b. After saltwater fording, wash semitrailer with clear water to guard against salt deposits forming on surfaces and causing corrosion.

CHAPTER 3
OPERATOR MAINTENANCE

Section 1. LUBRICATION INSTRUCTIONS

Paragraph Number	Title	Page Number
3-1	General	3-1
3-2	Specific Lubrication Instructions	3-1

3-1. GENERAL.

NOTE

These lubrication instructions are MANDATORY.

a. The M1062 7500 Gallon Fuel Tank Semitrailer must receive lubrication with approved lubricants at recommended intervals in order to be mission ready at all times.

b. The KEY lists lubricants to be used in all temperature ranges. Tabular listings show all lubrication points, name the item to be lubricated, the required lubricant, the recommended interval, and the estimated man-hours needed to perform the service. Notes at the end of the tabular listing provide specific lubrication instructions.

c. Broken arrow shafts (---) indicate lubrication points on both sides of the semitrailer.

d. Level of maintenance authorized to perform lubrication is indicated in parentheses on last line of ITEM NAME entry.

e. Recommended intervals are based on normal conditions of operation, temperature, and humidity. When operating under extreme conditions, lubricants should always be changed more frequently. When in doubt, notify your supervisor.

3-2. SPECIFIC LUBRICATION INSTRUCTIONS.

a. Maintain a record of lubrication performed and report any problems noted during lubrication. Refer to DA Pam 738-750 for maintenance forms and procedures to record and report any findings.

3-2. SPECIFIC LUBRICATION INSTRUCTIONS (Cont'd).

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

b. Use dry cleaning solvent (Item 10, Appendix E) to clean grease fittings, lubrication points, and surrounding areas before lubrication.

c. When lubricating at a grease fitting, apply enough grease to purge old grease from the lubricated area. When old grease oozes from grease fitting, purging and relubrication are adequate.

WARNING

Wipe clean excessive lubricant in the area of brake shoe linings to avoid grease soaking the linings. Replace grease soaked brake shoe linings. Failure to follow this warning may cause brakes to malfunction, resulting in serious injury or death to personnel.

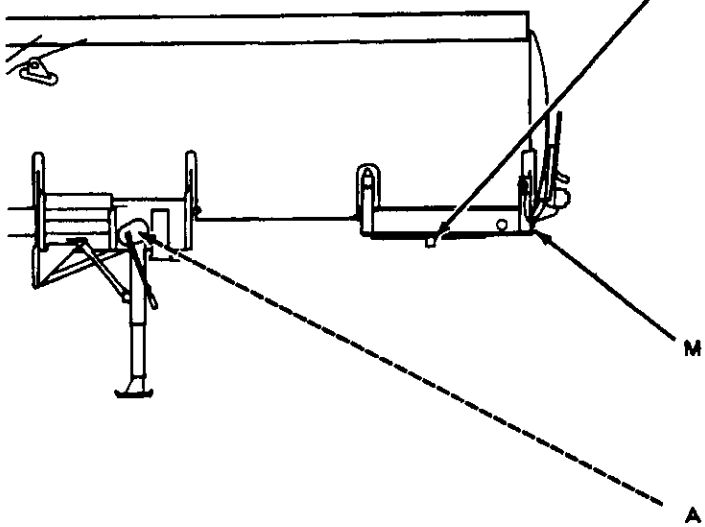
d. After lubrication, wipe clean excess oil or grease to prevent accumulation of foreign matter.

e. Refer to FM 9-207 for instructions on lubrication in cold weather.

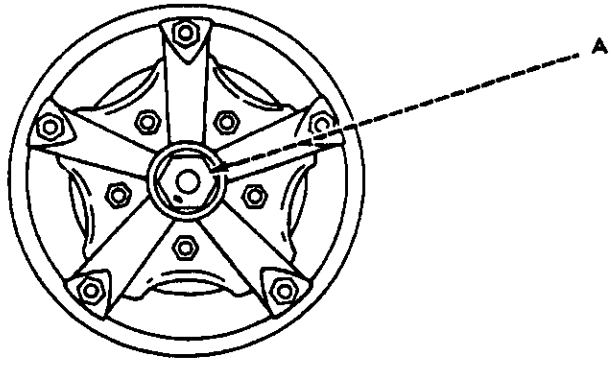
f. After operation in dusty or sandy conditions, clean and inspect all points of lubrication for fouled lubricants. Change lubricants as required.

– KEY –			
LUBRICANTS		**EXPECTED TEMPERATURES +125°F (52°C) to -25°F (-32°C)**	**INTERVALS**
OE/HDO-30	Oil, Lubricating, Engine MIL-L-2104	ALL TEMPERATURES (For Arctic Operation, Refer to FM 9-207)	M = Monthly S = Semiannually (every 6 months) A = Annually (every 12 months)
GAA	Grease, Automotive and Artillery MIL-G-10924		
GO 80/90	Lubricating Oil, Gear, Multipurpose MIL-L-2105		
MAG-1	Grease, Ball and Roller Bearing (73219) 18901		

3-2. SPECIFIC LUBRICATION INSTRUCTIONS (Cont'd).



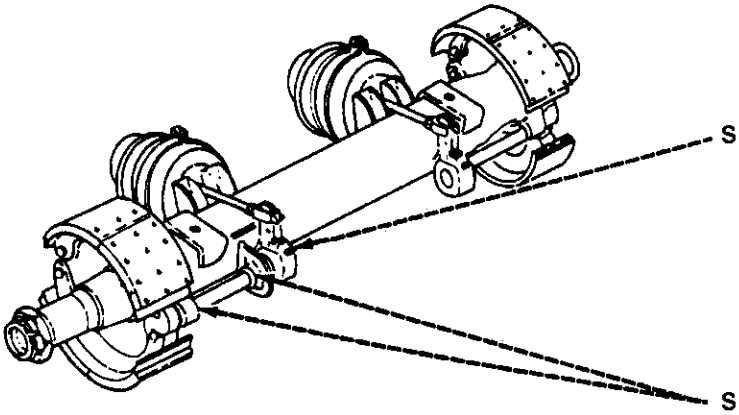
INTERVAL •	LUBRICANT	ITEM NAME
M	GAA	UPPER COUPLER ASSEMBLY (See Note 1) (O)
M	GAA	PICK-UP PLATE (See Note 1) (O)
A	GAA	LANDING GEAR: GEARBOX & LEG (2 grease fittings curbside, 1 grease fitting roadside) (See Views A and B and Note 2) (O)

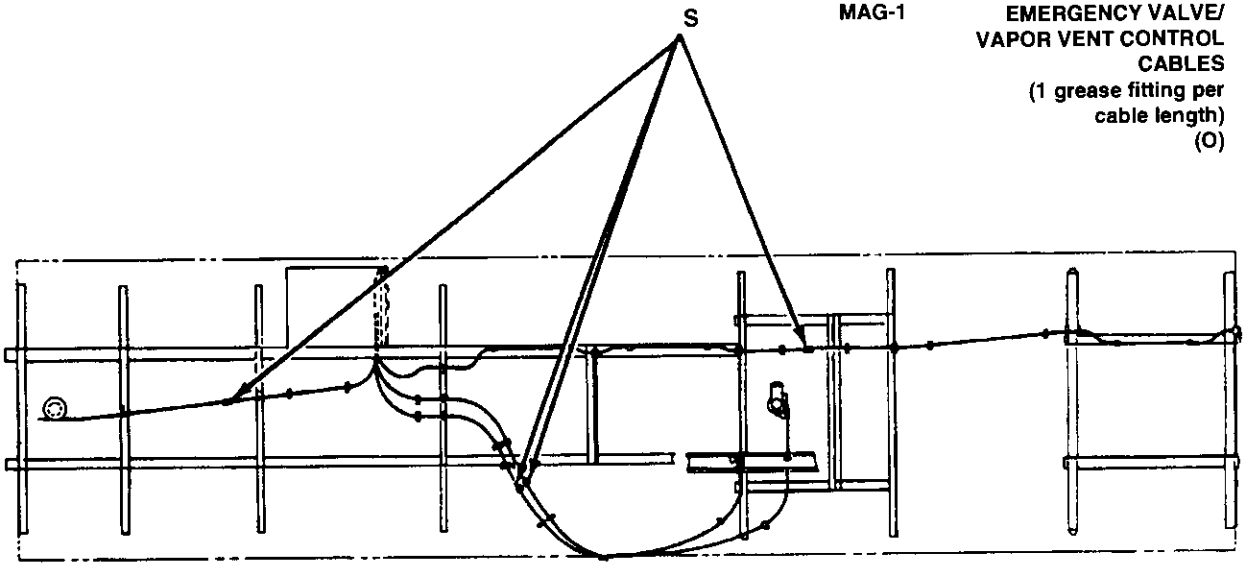


INTERVAL •	LUBRICANT	ITEM NAME
A	GO 80/90	WHEEL BEARINGS (See Note 3) (O)

TOTAL MAN-HOURS	
INTERVAL	MAN-HOUR
M	0.4
A	1.2

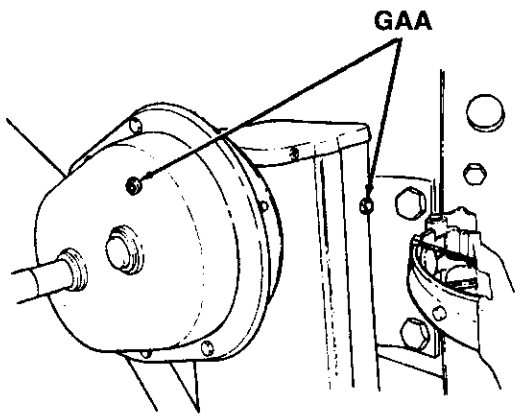
3-2. SPECIFIC LUBRICATION INSTRUCTIONS (Cont'd).

	INTERVAL•	LUBRICANT	ITEM NAME
	S	GAA	SLACK ADJUSTER (2 grease fittings per axle) (O)
	S	GAA	CAMSHAFT (4 grease fittings per axle) (O)

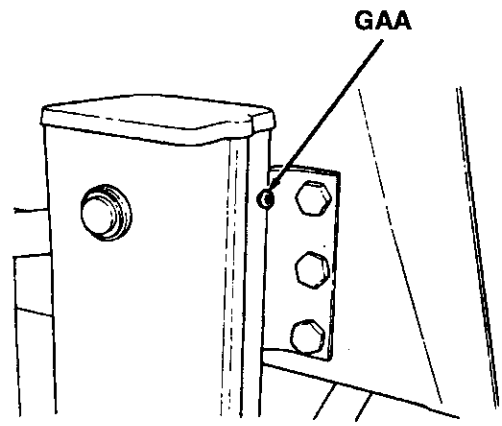
	INTERVAL•	LUBRICANT	ITEM NAME
	S	MAG-1	EMERGENCY VALVE/ VAPOR VENT CONTROL CABLES (1 grease fitting per cable length) (O)

TOTAL MAN-HOURS	
INTERVAL	MAN-HOUR
S	1.2

(A) LANDING GEAR — CURBSIDE



(B) LANDING GEAR — ROADSIDE



NOTES:

1. **PICK-UP PLATE, UPPER COUPLER ASSEMBLY:** Wipe surfaces clean, then apply a liberal coat of GAA.
2. **LANDING GEAR LEGS:** Fully extend landing gear legs and apply grease to lower portion. Apply grease to all grease fittings.
3. **WHEEL BEARINGS:** Place a suitable container under hubcap. Remove hubcap and allow all lubricating oil to drain. Install hubcap without hubcap plug. Add 1½ pints of lubricating oil or until even with fill line on clear hubcap. Install plug.
4. **OIL CAN POINTS:** Semiannually, or as required, use OE/HDO-30 to lubricate cabinet and stowage tube door hinges, landing gear handcrank swivel, emergency valve and vapor vent control levers, two emergency valve remote trip-releases, vapor vent linkage, and manhole fill cover hinge.

Section II. TROUBLESHOOTING PROCEDURES

Paragraph Number	Title	Page Number
3-3	General	3-6
3-4	Troubleshooting Symptom Index	3-7
Table 3-1	Operator Troubleshooting Procedures	3-8

3-3. GENERAL.

a. This section provides information for identifying and correcting malfunctions which may develop while operating the M1062 7500 Gallon Fuel Tank Semitrailer.

b. The troubleshooting symptom index in paragraph 3-4 lists common malfunctions which may occur. The symptom index refers you to the proper page in Table 3-1 for a troubleshooting procedure.

c. Refer to Chapter 1, Section III for a better understanding of how a system operates. If you are unsure of the location of an item mentioned in troubleshooting, refer to paragraph 1-7 or to the maintenance task where the item is replaced.

d. Before performing troubleshooting, read and follow all safety regulations found in Chapter 1, Section IV.

e. This section cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by listed corrective actions, notify unit maintenance.

f. When troubleshooting a malfunction:

(1) Locate symptom or symptoms in paragraph 3-4 that best describe malfunction.

(2) Turn to the page in Table 3-1 where the troubleshooting procedures for the malfunction in question are described. Headings at top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION (in step number order), and CORRECTIVE ACTION.

(3) Perform each step in order listed until malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

3-4. TROUBLESHOOTING SYMPTOM INDEX.

	Troubleshooting Procedure Page
BRAKES	
Grabbing	3-11
None or Insufficient	3-9
Slow Application or Release	3-11
Will Not Release	3-10
ELECTRICAL SYSTEM	
Convoy Warning Light Does Not Operate	3-9
Dim or Flickering Lights	3-9
Lamps Do Not Light:	
All Lamps Fait	3-8
One or More Lamps Fail	3-8
EMERGENCY VALVE	
Cycles Open and Closed During Bottom Loading	3-13
Does Not Open During Unloading	3-13
LANDING GEAR	
Difficult, Binding, or Erratic Operation	3-12
PRECHECK SYSTEM	
Emergency Valve Does Not:	
Close Within Two Minutes of Start	3-14
Open After Precheck Cycle Completed	3-14
WHEELS AND TIRES	
Dual Tires Rubbing	3-12
Noisy or Wobbly Tire and Rim Assemblies	3-12
Semitrailer Leans to One Side	3-11
Uneven Tire Wear	3-12

Table 3-1. Operator Troubleshooting Procedures.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

ELECTRICAL SYSTEM

1. ALL LAMPS FAIL TO LIGHT

Step 1. Check that light switch in tractor is set to ON (see TM 9-2320-273-10 or TM 9-2320-283-10).

Turn switch to ON position (see TM 9-2320-273-10 or TM 9-2320-283-10).

Step 2. Check for tripped circuit breakers in tractor (see TM 9-2320-273-10 or TM 9-2320-283-10).

Reset circuit breakers (see TM 9-2320-273-10 or TM 9-2320-283-10).

Step 3. Check to see that tractor's inter-vehicular electrical cable is securely connected to correct electrical connector on voltage control unit at front of semitrailer (see paragraph 2-12).

Connect tractor's intervehicular electrical cable securely to proper electrical connector (see paragraph 2-12).

Step 4. Check for damage to tractor's intervehicular electrical cable (see TM 9-2320-273-10 or TM 9-2320-283-10). Check for dirty or corroded pins on electrical connectors on voltage control unit (see paragraph 1-12).

Clean pins on semitrailer electrical connectors with a wire brush or clean rag and apply corrosion preventive compound (Item 7, Appendix E). If damage to tractor's intervehicular electrical cable or electrical connectors on semitrailer's voltage control unit is found, notify unit maintenance.

2. ONE OR MORE LAMPS FAIL TO LIGHT

Step 1. Check for tripped circuit breakers in tractor (see TM 9-2320-273-10 or TM 9-2320-283-10).

Reset circuit breakers (see TM 9-2320-273-10 or TM 9-2320-283-10).

Step 2. Check for damage to tractor's intervehicular electrical cable (see TM 9-2320-273-10 or TM 9-2320-283-10). Check for dirty or corroded pins on electrical connectors on voltage control unit (see paragraph 1-12).

Clean pins on semitrailer electrical connectors with a wire brush or clean rag and apply corrosion preventive compound (Item 7, Appendix E) . If damage to tractor's intervehicular electrical cable or electrical connectors on semitrailer's voltage control unit is found, notify unit maintenance.

Step 3. Trace electrical conduit between malfunctioning lamp and voltage control unit at front of semitrailer (see paragraph 1-12). Check for breaks or other damage to electrical conduit.

Notify unit maintenance if breaks or other damage is found.

Table 3-1. Operator Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

3. CONVOY WARNING LIGHT DOES NOT OPERATE

Step 1. Check that tractor's 12-volt intervehicular electrical cable is connected to semitrailer's 12-volt electrical connector (see paragraph 2-12). Convoy warning light does not operate on 24 volts.

Connect tractor's 12-volt intervehicular electrical cable to semitrailer's 12-volt electrical connector (see paragraph 2-12).

Step 2. Check that convoy warning light toggle switch on front face of roadside light box is turned on (see paragraph 2-2).

Turn on toggle switch (see paragraph 2-2).

Step 3. Check that cable of convoy warning light is plugged into receptacle of condulet at rear dam (see paragraph 2-23).

Plug cable of convoy warning light securely into receptacle of condulet at rear dam (see paragraph 2-23).

Step 4. Perform all steps of Malfunction 2, "One or More Lamps Fail to Light".

4. DIM OR FLICKERING LIGHTS

Step 1. Check tractor battery for adequate charge (see TM 9-2320-273-10 or TM 9-2320-283-10).

Have unit maintenance charge or replace tractor battery as required.

Step 2. Check for damage to tractor's intervehicular electrical cable (see TM 9-2320-273-10 or TM 9-2320-283-10). Check for dirty or corroded pins on electrical connectors on voltage control unit (see paragraph 1-12).

Clean pins on semitrailer electrical connectors with a wire brush or clean rag and apply corrosion preventive compound (Item 7, Appendix E). If damage to tractor's intervehicular electrical cable or electrical connectors on semitrailer's voltage control unit is found, notify unit maintenance.

BRAKES

5. NO BRAKES OR INSUFFICIENT BRAKES

Step 1. Check air pressure gage in tractor. It should read at least 65 psi (448 kPa) (see TM 9-2320-273-10 or TM 9-2320-283-10).

If air pressure gage reads low, notify unit maintenance.

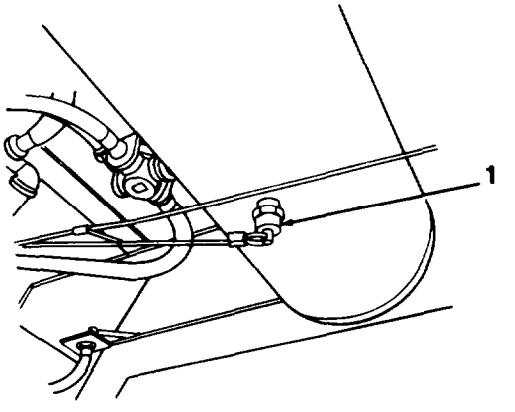
NOTE

SERVICE air coupling is blue.

Step 2. Check that intervehicular SERVICE air coupling is properly connected (see paragraph 2-12).

Connect air coupling properly. Connect tractor's SERVICE air coupling to semitrailer's SERVICE air coupling (see paragraph 2-12).

Table 3-1. Operator Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	
Step 3. Look under semitrailer and check air lines for kinks, breaks, or loose connections. Listen for leaks along air lines, at connections, and at valves (see paragraph 1-13). If kinks, breaks, leaks, or loose connections are found, notify unit maintenance.	
Step 4. Check air reservoir draincocks (1) for obstructions which may prevent them from closing. Remove obstructions from air reservoir draincocks. If damage is found, notify unit maintenance.	

6. BRAKES WILL NOT RELEASE

Step 1. Check that parking/emergency brakes in tractor are not set (see TM 9-2320-273-10 or TM 9-2320-283-10).

Release parking/emergency brakes in tractor (see TM 9-2320-273-10 or TM 9-2320-283-10).

Step 2. Check that tractor has developed sufficient air pressure to release semitrailer parking/emergency brakes. Air pressure should read at least 65 psi (448 kPa) (see TM 9-2320-273-10 or TM 9-2320-283-10).

If air pressure gage in tractor shows insufficient air pressure, notify unit maintenance.

NOTE

EMERGENCY air coupling is red.

Step 3. Check that intervehicular EMERGENCY air coupling is properly connected (see paragraph 2-12).

Connect air coupling properly. Connect tractor's EMERGENCY air coupling to semitrailer's EMERGENCY air coupling (see paragraph 2-12).

Table 3-1. Operator Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 4. Check that brake interlock paddles at front port or rear inlet are not pushed in (see Table 2-1, 13d).

Install front port dust cap with notch positioned so as not to push in on brake interlock paddle (see Table 2-1, 3d).

Step 5. Check for signs of damage to brake interlock valves at front port or rear inlet (see paragraph 1-13).

If damage to brake interlock valves at front port or rear inlet is found, notify unit maintenance.

Step 6. Look under semitrailer and check air lines for kinks, breaks, or loose connections. Listen for leaks along air lines, at connections, and at valves (see paragraph 1-13).

If kinks, breaks, leaks, or loose connections are found, notify unit maintenance.

7. SLOW BRAKE APPLICATION OR RELEASE

Look under semitrailer and check air lines for kinks, breaks, or loose connections. Listen for leaks along air lines, at connections, and at valves (see paragraph 1-13).

If kinks, breaks, leaks, or loose connections are found, notify unit maintenance.

8. GRABBING BRAKES

Step 1. Check that semitrailer's air system is free of moisture.

Disconnect tractor SERVICE and EMERGENCY air couplings from semitrailer (see paragraph 2-14). Pull on air reservoir draincock cable pull until all moisture is drained from air reservoirs (see paragraph 2-2). Connect tractor SERVICE and EMERGENCY air couplings to semitrailer (see paragraph 2-12). Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10). Check brakes.

Step 2. Look under semitrailer and visually inspect area of brake shoe linings. Be alert for signs of oil or grease.

If any oil or grease is found, notify unit maintenance.

WHEELS AND TIRES

9. SEMITRAILER LEANS TO ONE SIDE

Step 1. Check for correct air pressure in all tires. Air pressure should be 95 psi (655 kPa),

Inflate tires to 95 psi (655 kPa).

Table 3-1. Operator Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Look under semitrailer and check for a broken spring or other suspension component (see paragraph 1-14).

Report any damage to unit maintenance.

10. UNEVEN TIRE WEAR

Step 1. Check for correct air pressure in all tires. Air pressure should be 95 psi (655 kPa).

Inflate tires to 95 psi (655 kPa).

Step 2. Check for improper operator driving habits. High speed cornering causes wear on edges of tires; rapid stopping causes wear in center of tire.

Correct driving habits as required.

Step 3. Inspect wheel nuts and rim clamps for looseness (see Table 2-1, 3n and 7c).

If wheel nuts or rim clamps are loose, notify unit maintenance.

Step 4. Check dual wheels to see that tires are matched (see paragraph l-l 1).

If tires are not matched, notify unit maintenance.

11. NOISY OR WOBBLY TIRE AND RIM ASSEMBLIES

Step 1. Inspect tires for cuts, gouges, cracks, or other damage.

If any damage is found, notify unit maintenance.

Step 2. Inspect wheel nuts and rim clamps for looseness (see Table 2-1, 3n and 7c),

If wheel nuts or rim clamps are loose, notify unit maintenance.

12. DUAL TIRES RUBBING

Check for proper tire and wheel size (see paragraph 1-11).

If tire and wheel are not proper size, notify unit maintenance.

LANDING GEAR

13. DIFFICULT, BINDING, OR ERRATIC OPERATION

Inspect landing gear gearbox on curbside leg for damage. Inspect legs for damage.

If damaged, notify unit maintenance.

Table 3-1. Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

EMERGENCY VALVE AND PRECHECK SYSTEM

14. EMERGENCY VALVE DOES NOT OPEN DURING UNLOADING

Step 1. From under semitrailer, trace control cable tubing between emergency valve and cabinet (see paragraph 1-15). Check for damage to emergency valve control cable and tubing that connects emergency valve and emergency valve control lever inside cabinet (see paragraph 2-2). Check that union at tubing grease fitting, midway between cabinet and emergency valve, is connected.

If control cable and tubing are damaged, or if union is disconnected, notify unit maintenance.

Step 2. Check for damage to emergency valve control lever in cabinet or to two remote trip-releases (top curbside and front roadside) (see paragraph 2-2).

If any damage to emergency valve control lever in cabinet or to remote trip-releases is found, notify unit maintenance.

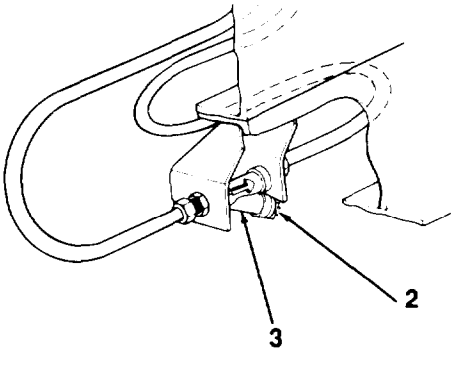
15. EMERGENCY VALVE CYCLES OPEN AND CLOSED DURING BOTTOM LOADING

NOTE

If emergency valve is cycling open and closed, it will be making an on or off screeching noise and tank will be filling slowly.

Step 1. Check strainer assembly (3) for obstruction. While fuel is being bottom loaded, place a suitable container under strainer assembly. Remove ¼ in. (6.4 mm) center plug (2) and allow force of fuel to clear obstruction through opening. Install plug.

If obstruction will not clear, notify unit maintenance to service strainer assembly.



Step 2. Check that air has been properly bled from jet level sensor lines (see paragraph 2-19).

Bleed air from jet level sensor lines (see paragraph 2-19).

Table 3-1. Operator Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

16. EMERGENCY VALVE DOES NOT CLOSE WITHIN TWO MINUTES OF START OF PRECHECK CYCLE

Step 1. While bottom loading, check pressure gage in cabinet for a low reading (see paragraph 2-19). If reading is less than 5-10 psi (34-69 kPa), fuel flow rate or pressure generated by pump is too low; precheck system will not function.

Increase fuel flow rate or pressure generated by pump.

Step 2. If malfunction persists, close precheck valve (see paragraph 2-2). Bottom load manually with an observer stationed at manhole opening to gage fuel level (see paragraph 2-18). Notify unit maintenance.

17. EMERGENCY VALVE DOES NOT OPEN TO ALLOW BOTTOM LOADING AFTER PRECHECK CYCLE COMPLETED

Step 1. Check that precheck valve is closed (see paragraph 2-2).

Close precheck valve (see paragraph 2-2).

NOTE

High pressure, high flow rates, low temperatures, or a combination of these three factors, can cause emergency valve not to open again after precheck valve has been closed. Performance of step 2 should correct the problem.

Step 2. Shut down pumping operation for 10-15 seconds, then resume. DO NOT activate the precheck cycle (see paragraph 2-19).

Emergency valve should open, allowing bottom loading to resume. If emergency valve does not open, notify unit maintenance.

CHAPTER 4
UNIT MAINTENANCE

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

Paragraph Number	Title	Page Number
4-1	Common Tools and Equipment	4-1
4-2	Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	4-1
4-3	Repair Parts	4-1

4-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment, refer to the *Modified Table of Organization and Equipment (MTOE)* applicable to your unit.

4-2. SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT.

For authorization of special tools, test, measurement, and diagnostic equipment (TMDE), and support equipment required to maintain the M1062 Tank Semitrailer, refer to Appendix B, *Maintenance Allocation Chart*.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in Appendix F, *Repair Parts and Special Tools Lists*.

Section II. SERVICE UPON RECEIPT

Paragraph Number	Title	Page Number
4-4	General	4-2
4-5	Inspection Instructions	4-2
4-6	Servicing Instructions	4-3

4-4. GENERAL.

When an M1062 7500 Gallon Fuel Tank Semitrailer is first received by the using unit, determine whether it has been properly prepared for service and is in condition to perform its mission. Follow the inspection instructions found in paragraph 4-5 and the servicing instructions found in paragraph 4-6.

4-5. INSPECTION INSTRUCTIONS.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

a. Use dry cleaning solvent (Item 10, Appendix E) to clean all exterior surfaces coated with rust preventive compounds.

b. Remove any protective materials used on semitrailer during shipment. Unpack and properly stow all Basic Issue Items (BII).

c. Perform *Semiannual* (S) preventive maintenance checks and services found in Table 4-1. Correct any deficiency, if authorized by the Maintenance Allocation Chart (MAC) in Appendix B. If not authorized, notify direct support maintenance.

WARNING

Grabhandles on top of semitrailer are dismountable. Be sure that they are securely fastened before using them. Failure to follow this warning may result in serious injury to personnel.

d. If semitrailer was shipped without grabhandles, unstow and install (see paragraph 2-22).

e. Make a complete visual inspection of the semitrailer to ensure that all accessories and required publications are present.

4-6. SERVICING INSTRUCTIONS.

a. If any system of the semitrailer does not operate properly, refer to troubleshooting instructions found in Chapter 3, Section II or in Section IV of this chapter.

b. Lubricate all lubrication points as described in Chapter 3, Section I, regardless of interval.

c. Schedule preventive maintenance services on DD Form 314, *Preventive Maintenance Schedule and Record*.

d. Make a final, complete inspection of the semitrailer.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Paragraph Number	Title	Page Number
4-7	General	4-4
4-8	Intervals	4-4
4-9	Reporting Repairs	4-4
4-10	General PMCS Procedures	4-4
4-11	Specific PMCS Procedures	4-5
Table 4-1	Unit Preventive Maintenance Checks and Services (PMCS)	4-6

4-7. GENERAL.

a. The M1062 7500 Gallon Fuel Tank Semitrailer must be inspected on a regular basis so that defects are found before they result in serious damage, failure, or injury to personnel. This section contains systematic instructions on inspections, adjustments, and corrections to be performed by unit maintenance.

b. Before performing PMCS, read and follow the safety regulations found in Chapter 1, Section IV, *General Safety Regulations.*

4-8. INTERVALS.

a. Unit maintenance must perform PMCS, found in Table 4-1, at the following intervals:

(1) *Monthly* (M), once each month

(2) *Semiannually* (S), once every six months

(3) *Annually* (A), once each year.

b. Perform all *Monthly* and *Semiannual* inspections, in addition to *Annual* inspections, at the time of annual inspections.

4-9. REPORTING REPAIRS.

All defects shall be reported on DA Form 2404, *Equipment Inspection and Maintenance Worksheet,* immediately after completing PMCS and before taking corrective action. These defects must also be reported in the equipment log.

4-10. GENERAL PMCS PROCEDURES.

a. While performing PMCS procedures, always keep in mind CAUTIONs and WARNINGs.

b. While performing specific PMCS procedures, ensure that items are correctly assembled, secure, serviceable, adequately lubricated, and not worn or leaking as defined below:

(1) An item is CORRECTLY ASSEMBLED when it is in proper position and all parts are present.

4-10. GENERAL PMCS PROCEDURES (Con't)

(2) Wires, nuts, hoses, fittings, or attaching hardware are SECURE when they cannot be easily removed by hand or by wrench.

(3) An item is SERVICEABLE if it is not worn beyond repair or likely to fail before the next scheduled inspection.

(4) An item is ADEQUATELY LUBRICATED if it has been lubricated in accordance with Chapter 3, Section I.

(5) An item is WORN if there is too much play between joining parts, if the item does not meet minimum wear specifications provided, or when warning, caution, and data stencil markings, plates, or decals are not legible.

(6) For a classification of LEAKING, see paragraph 2-9.

c. Perform inspections of welds, electrical conduits, tubing, and hoses as described below:

(1) Check for loose or chipped paint, rust, or cracks where parts are welded together. If a bad weld is found, notify direct support maintenance.

(2) Look for cracked, frayed, loose, or broken electrical conduit, tubing, and hoses. Tighten all loose components. Repair or report unserviceable items.

(3) Check for loose or damaged couplings and fittings. Wet spots indicate leaks, but a stain around a coupling or fitting can also mean a leak. If a leak comes from a loose coupling or fitting, tighten it. Repair or report unserviceable items.

d. Where the instruction *tighten* appears in a procedure, fully loosen then tighten the item to the given torque. If no torque valve is given, refer to Appendix H, *Torque Limits*. If one of an item's fasteners is found to be loose, it is best to fully loosen all the fasteners, then tighten to the proper torque.

e. Where the instruction *clean* appears in a procedure, use guidelines found in paragraph 2-8. Even if a procedure does not specify cleaning, be aware of any buildup of dirt, grease, oil, and debris. Clean any such buildups using cleaning agents authorized in Appendix E. Lubricate as required (see Chapter 3, Section I) after cleaning.

4-11. SPECIFIC PMCS PROCEDURES.

a. Unit PMCS are provided in Table 4-1. Always perform PMCS in the order listed. Once it becomes a habit, anything that is not right can be spotted in a minute. If any defects are discovered through PMCS, perform the appropriate troubleshooting task in Section IV of this chapter. If any component or system is not serviceable, or if the given service does not correct the problem, notify direct support maintenance.

b. The PMCS procedures in Table 4-1 are performed at three intervals: *Monthly, Semiannually,* or *Annually.* Before performing preventive maintenance, read all checks required for the applicable interval and prepare tools needed to make all checks. Have several clean rags (Item 18, Appendix E) handy. Perform ALL inspections in the order listed within the designated interval.

c. The columns in PMCS table are defined as follows:

(1) **Item No.** Provides a logical sequence for PMCS to be performed and is used as a source number when recording PMCS results on DA Form 2404, *Equipment Inspection and Maintenance Worksheet.*

(2) **Interval.** Specifies interval at which PMCS is to be performed.

4-11. SPECIFIC PMCS PROCEDURES (Con't).

(3) **Item To Be Inspected.** Lists system and common name of items that are to be inspected.

(4) **Procedures.** Lists specific servicing, inspection, replacement, or adjustment procedures to be followed.

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS).

M-Monthly **S-Semiannually** **A-Annually**

ITEM NO.	INTERVAL M	INTERVAL S	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES
1				**STEAM CLEANING**	**NOTE** **Steam cleaning of semitrailer is performed to aid in a careful SEMIANNUAL inspection.**
		•			Steam clean the exterior of semitrailer, including undercarriage.
2				**OPERATIONAL CHECK**	**NOTE** **Perform operational check while coupled to tractor (see paragraph 2-12).**
		•			Fully pressurize semitrailer air system (see TM 9 -2320-273-10 or TM 9-2320-283-10). Apply a soap solution (Item 9, Appendix E) to all couplings, air lines, fittings, air reservoirs, brake chambers, and valves (see paragraph 4-39). Make note of any leaks, damage, or loose connections found. Tighten loose connections or make repairs as required (see paragraphs 4-38 through 4-44). If two or more consecutive clips supporting air lines are damaged or missing, purge semitrailer tank (see paragraph 4-68). Notify direct support maintenance to make welding repairs to clips.
3				**TANK AND PIPING ASSEMBLY**	
			•		a. Purge tank (see paragraph 4-68). Inspect tank interior for pitting, scaling, or bad welds. If tank interior is damaged, notify direct support maintenance.
			•		b. Have direct support maintenance perform vapor integrity test (see paragraph 5-8).

Table. Unit Preventive Maintenance Checks and Services (PMCS) Con't).

M-Monthly S-Semiannually A-Annually

ITEM NO.	INTERVAL M	INTERVAL S	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES
4				**FRONT OF SEMITRAILER**	
	•				a. Inspect voltage control unit, electrical connectors, and wiring for damage, loose connections, corrosion, or dirt. Clean and tighten components as required. If any component is damaged, replace (see paragraphs 4-14 through 4-17, 4-29, and 4-30).
	•				b. Check that electrical conduits coming into voltage control unit are properly supported, are not damaged, and that connections are not loose. Tighten any loose connections. If conduit is damaged, replace (see paragraph 4-29).
			•		c. Replace air coupling seals (see paragraph 4-38).
	•				d. Inspect front roadside grounding stud for damage. It must be unpainted, securely mounted, and clean. If grounding stud is damaged, replace (see paragraph 4-64).
		•			e. Inspect pick-up plate for loose mounting bolts, cracks, or other damage. If loose, torque pick-up plate mounting bolts to 120 lb.-ft. (163 N•m). If pick-up plate is damaged, replace (see paragraph 4-51).
		•			f. Inspect upper coupler assembly for loose mounting bolts, cracks, bad welds, or a bowed condition. If loose, torque upper coupler assembly mounting bolts to 120 lb.-ft. (163 N•m). If upper coupler assembly is damaged, notify direct support maintenance.
5				**ROADSIDE OF SEMITRAILER**	
	•				a. Inspect front port and butterfly valve and rear inlet for looseness or damage. Be alert for signs of leaks. Tighten mounting screws if loose. If any component is damaged, replace (see paragraph 4-80).
	•				b. Inspect grounding stud at cabinet for damage. It must be unpainted, securely mounted, and clean. If grounding stud is damaged, replace (see paragraph 4-64).
		•			c. Inspect ground rod tube assembly for looseness of mounting hardware or damage. Tighten mounting hardware if loose.
	•				d. Inspect cabinet and cabinet braces for looseness of mounting hardware or damage. Tighten mounting bolts if loose. If cabinet is damaged, notify direct support maintenance.

Table. Unit Preventive Maintenance Checks and Services (PMCS) Con't).

M-Monthly S-Semiannually A-Annually

ITEM NO.	INTERVAL M	S	A	ITEM TO BE INSPECTED	PROCEDURES
5				**ROADSIDE OF SEMITRAILER (Con't)**	
					CAUTION **Ensure that semitrailer tank is empty before operating emergency valve and vapor vent control levers.** **NOTE** **Emergency valve and vapor vent control levers should offer resistance when pulled. This is normal.**
	•				e. Operate emergency valve and vapor vent control levers in cabinet (see paragraph 2-2). Operation should be smooth and free of binding. If operation is not smooth, trace cable and tubing assembly and check for proper lubrication at union of tubing grease fittings. Lubricate as required (see Chapter 3, Section I).
	•				f. Check for breaks, kinks, or frays in emergency valve cable and tubing assembly, or looseness of mounting hardware. Tighten loose mounting hardware and/or replace damaged components as required. Adjust length of cable at BOTH ends as required (see paragraphs 4-74 and 4-76).
	•				g. Inspect pressure gage and precheck valve in cabinet for looseness or damage to mounting hardware or fittings. Turn handle of precheck valve and check for smooth, free operation. If handle turns with difficulty, precheck valve may have internal damage. Check condition of all precheck tubing. Be alert for signs of leaks. Tighten loose mounting hardware or fittings. Replace any damaged component (see paragraph 4-72).
	•				h. Check wheel bearing lubricant level at hubcaps. If level is below fill mark, remove hubcap plug and add proper lubricant until even with fill mark. Install plug (see Chapter 3, Section I).
			•		i. Clean and inspect wheel bearings and replace wheel oil seals (see paragraph 4-46).

Table. Unit Preventive Maintenance Checks and Services (PMCS) Con't).

M-Monthly S-Semiannually A-Annually

ITEM NO.	INTERVAL M	S	A	ITEM TO BE INSPECTED	PROCEDURES
5				**ROADSIDE OF SEMITRAILER (Con't)**	
					NOTE **If semitrailer is new, wheel nut torque should be checked at first 100, 500, and 1,000 miles. Thereafter, check should be made MONTHLY.**
	•				j. Check torque of wheel nuts at each wheel. Wheel nuts should be torqued to 250 lb.-ft. (339 N•m).
6				**REAR OF SEMITRAILER**	
	•				Inspect grounding stud at roadside of bumper for damage. It must be unpainted, securely mounted, and clean. If grounding stud is damaged, replace (see paragraph 4-64).
7				**UNDER SEMITRAILER**	
		•			a. Inspect brake linkage for damage or looseness of mounting hardware. Tighten loose mounting hardware or replace components as required (see paragraph 4-36, 4-37, and 4-40).
		•			b. Inspect brake shoe linings for wear. If linings measure 1/4 in. (6.35 mm) or less at their thinnest point, replace brake shoes (see paragraph 4-35).
		•			c. Adjust brakes and length of travel of brake chamber pushrod (see paragraph 4-34).
		•			d. With brakes adjusted, check for proper wheel bearing adjustment. Adjust wheel bearings as required (see paragraph 4-47).
		•			e. Inspect radius rods and equalizer for cracks, breaks, or looseness of mounting hardware. Tighten loose mounting hardware or replace components as required (see paragraphs 4-55 and 4-57).
		•			f. Check springs for a cracked leaf and for looseness of rebound bolts. Tighten rebound bolts if loose. If a cracked leaf is found, replace springs on both roadside and curbside (see paragraph 4-56).
		•			g. Check U-bolts for damage. Torque U-bolt nuts in a diagonal sequence to 360 lb.-ft. (488 N•m).

Table. Unit Preventive Maintenance Checks and Services (PMCS) Con't).

M-Monthly S-Semiannually A-Annually

ITEM NO.	INTERVAL M	INTERVAL S	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES
7				**UNDER SEMITRAILER (Con't)**	
		•			h. Inspect chassis for cracks, breaks, or bad welds. Notify direct support maintenance of any damage found.
		•			i. Inspect emergency valve for looseness of mounting bolts. Inspect emergency valve or cable linkage for damage. Be alert for signs of leaks. Tighten loose mounting bolts. If cable linkage is damaged, replace (see paragraph 4-76). If emergency valve is damaged, replace (see paragraph 4-82).
		•			j. Inspect strainer assembly for looseness of mounting hardware or damage. Be alert for signs of leaks. If strainer assembly is damaged, replace (see paragraph 4-71).
		•			k. Service strainer assembly (see paragraph 4-71).
8				**TOP OF SEMITRAILER**	
		•			a. Open manhole fill cover (see paragraph 2-16). Inspect manhole lid, fill cover gasket, and fill cover lid and latching mechanism for damage. If any component is damaged, replace (see paragraph 4-67).
		•			b. Inspect manhole fill cover vacuum and pressure/vacuum vents. If gummed up, or if there are signs of obvious damage, replace (see paragraph 4-67). Close manhole fill cover (see paragraph 2-16).
	•				c. Inspect grounding studs at roadside and curbside overturn rail for damage. They must be unpainted, securely mounted, and clean. If grounding stud is damaged, replace (see paragraph 4-64).
		•			d. Inspect nonskid surface of walkway. If nonskid surface is worn off, use Deck Cover Compound (Item 6, Appendix E) to replace.
9				**CURBSIDE OF SEMITRAILER**	
	•				a. Check wheel bearing lubricant level at hubcaps of front and rear wheels. If level is below fill mark, remove hubcap plug and add proper lubricant until even with fill mark. Install plug (see Chapter 3, Section I).
			•		b. Clean and inspect wheel bearings and replace wheel oil seals (see paragraph 4-46).

Table. Unit Preventive Maintenance Checks and Services (PMCS) Con't).

M-Monthly S-Semiannually A-Annually

ITEM NO.	INTERVAL M	INTERVAL S	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES
					NOTE **If semitrailer is new, wheel nut torque should be checked at first 100, 500, and 1000 miles. Thereafter, check should be made MONTHLY.**
	•				c. Check torque of wheel nuts at each wheel. Wheel nuts should be torqued to 250 lb.-ft. (339 N•m).
		•			d. Inspect hose and gage stick tube assembly for looseness of mounting hardware or damage. Tighten mounting hardware if loose.
	•				e. Inspect grounding stud at spare tire carrier for damage. It must be unpainted, securely mounted and clean. If grounding stud is damaged, replace (see paragraph 4-64).

Section IV. TROUBLESHOOTING PROCEDURES

Paragraph Number	Title	Page Number
4-12	General	4-12
4-13	Troubleshooting Symptom Index	4-13
Table 4-2	Unit Troubleshooting Procedures	4-14

4-12. GENERAL.

a. This section provides information for identifying and correcting malfunctions which may develop while operating the M1062 7500 Gallon Fuel Tank Semitrailer.

b. The troubleshooting symptom index in paragraph 4-13 lists common malfunctions which may occur and refers you to the proper page in Table 4-2 for a troubleshooting procedure.

c. Refer to Chapter 1, Section III if unsure of how a system operates. If you are unsure of the location of an item mentioned in troubleshooting, refer to paragraph 1-7 or to the maintenance task where the item is replaced.

d. Before performing troubleshooting, read and follow the safety regulations found in Chapter 1, Section IV.

WARNING

When troubleshooting an electrical malfunction, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

e. When troubleshooting an electrical malfunction, always disconnect intervehicular electrical cable from semitrailer.

f. Refer to paragraph 4-30 to determine routing of electrical wires and location of electrical components.

g. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify direct support maintenance.

h. When troubleshooting a malfunction:

(1) Question the operator to obtain any information that might help determine the cause of the problem. Before continuing, ensure that all applicable operator troubleshooting was performed.

(2) Locate the symptom or symptoms in paragraph 4-13 that best describe the malfunction. If the appropriate symptom is not listed, notify direct support maintenance.

4-12. GENERAL (Con't).

(3) Turn to the page in Table 4-2 where the troubleshooting procedures for the malfunction in question are described. Headings at the top of each page show how each troubleshooting procedure is organized: MALFUNCTION, TEST OR INSPECTION (in step number order), and CORRECTIVE ACTION.

(4) Perform each step in the order listed until the malfunction is corrected. DO NOT perform any maintenance task unless the troubleshooting procedure tells you to do so.

4-13. TROUBLESHOOTING SYMPTOM INDEX.

	Troubleshooting Procedure Page
BRAKES	
Drag	4-23
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Slow Application or Release	4-24
Will Not Release	4-23
ELECTRICAL SYSTEM	
Lights:	
All Lights on a Circuit Do Not Operate	4-17
Convoy Warning Light Does Not Operate	4-20
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Single Light Does Not Operate	4-14
EMERGENCY VALVE AND VAPOR VENT CABLE CONTROLS	
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EMERGENCY VALVE/JET LEVEL SENSOR	
Bottom Loading :	
No Flow	4-28
No Shutoff After Tank Is Full	4-30
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Emergency Valve Does Not:	
Close Within Two Minutes of Start	4-30
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Semitrailer Pulls Hard, Drags, Resists Roll	4-27

4-13. TROUBLESHOOTING SYMPTOM INDEX (Con't).

	Troubleshooting Procedure Page
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Dual Tires Rubbing	4-26
Loss of Air Pressure	4-25
Noisy	4-24
Uneven Wear	4-25
Wobbly Tire and Rim Assemblies	4-24

Table 4-2. Unit Troubleshooting Procedures.

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

ELECTRICAL SYSTEM

1. SINGLE LIGHT DOES NOT OPERATE

WARNING

When troubleshooting an electrical malfunction, ALWAYS disconnect inter-vehicular cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- Refer to paragraph 4-30 to determine routing of electrical wires and location of electrical components.
- To ensure an accurate reading, probes of multimeter must contact bare wire and unpainted metal surfaces.

Step 1. Remove lamp from light socket (see paragraph 4-18). Check lamp

If there is no continuity, replace lamp (see paragraph 4-18).

Step 2. Check continuity between ground side of light socket and frame. DO NOT remove light housing while making this check (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

If there is continuity, go to step 3.

If there is no continuity, check light for damaged or corroded housing. Check for loose or corroded screws mounting light to semitrailer. If screws are loose, tighten. If any component is damaged or corroded, replace (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 3. Visually check button contacts inside light socket for looseness, corrosion, or other damage.

If button contacts are loose, corroded, or otherwise damaged, replace (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

NOTE

- **Use an extension wire, as required, long enough to reach between connectors.**
- **Location of connectors will vary with light being checked. If connector is inside light box at rear of semitrailer, stop/taillight must be removed (see paragraph 4-20). If connector is at side clearance and marker light, cover of condulet must be removed (see paragraph 4-25).**

Step 4. Trace circuit between button contact at light socket and first connector. Check continuity in wire between button contact and first connector. Check for a short in same length of wire. Check for loose, disconnected, or damaged connectors and wires.

If there is continuity, that length of wire is O.K.

If there is no continuity or wire is shorted, replace wire (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

Step 5. Check for continuity and a short in wire between first connector and next connector. Repeat wire checks until circuit breaker in voltage control unit at front of semitrailer is reached. Check for loose, disconnected, or damaged connectors and wires.

If there is no continuity, or if wire is shorted, replace wire (see paragraph 4-29).

Step 6. Check circuit across circuit breaker posts.

If there is continuity, circuit breaker is O.K.

If there is no continuity, replace circuit breaker (see paragraph 4-16).

NOTE

Perform step 7 if affected light operates on circuit breaker #1, #2, #5, #6, #7, or #8.

Step 7. Check continuity in wire between circuit breaker post and pin at front of 12-volt electrical connector.

If there is continuity, that wire is O.K.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector as well (see paragraph 4-17).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

NOTE

Perform step 8 if affected light operates on circuit breaker #3, #4, or #9.

Step 8. Check for continuity in wire between circuit breaker post and pin at front of 24-volt electrical connector.

If there is continuity, that wire is O.K.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector (see paragraph 4-17).

NOTE

Perform step 9 if affected light operates on circuit breaker #7 or #8 and malfunction occurred when semitrailer was connected to 24-volt intervehicular cable.

Step 9. Check for continuity in wire between pin #3 or #5 of 12-volt electrical connector and resistor. Check for continuity in wire between resistor and pin B or J at front of 24-volt electrical connector.

If there is continuity, that wire is O.K. Go to step 10.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector (see paragraph 4-17). If malfunction still exists, go to step 10.

NOTE

Testing of each resistor, located on cover of voltage control unit, is the same.

Step 10. Check resistor. Reading should be within range of 6-8 ohms.

If reading is within range of 6-8 ohms, resistor is O.K.

if reading is not within range of 6-8 ohms, replace resistor (see paragraph 4-15).

Step 11. Troubleshoot tractor electrical system (see TM 9-2320-273-20 or TM 9-2320-283-20).

If malfunction still exists, replace voltage control unit (see paragraph 4-14).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

2. ALL LIGHTS ON A CIRCUIT DO NOT OPERATE

WARNING

When troubleshooting an electrical malfunction, ALWAYS disconnect intervehicular cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- **Refer to paragraph 4-30 to determine routing of electrical wires and location of electrical components.**
- **Refer to Table 4-3 to determine which lights operate off same circuit breaker circuit.**
- **To ensure an accurate reading, probes of multimeter must contact bare wire and unpainted metal surfaces.**

Step 1. Troubleshoot tractor electrical system (see TM 9-2320-273-20 or TM 9-2320-283-20).

Step 2. Check circuit across circuit breaker posts.

If there is continuity, circuit breaker is O.K. Go to step 3. If at circuit breaker #3, #4, or #9, go to step 4.

If there is no continuity, replace circuit breaker (see paragraph 4-16). If malfunction still exists, go to step 3. If at circuit breaker #3, #4, or #9, go to step 4.

NOTE

Perform step 3 if at circuit breaker #1, #2, #5, #6, #7, or #8.

Step 3. Check continuity in wire between circuit breaker post and pin at front of 12-volt electrical connector.

If there is continuity, that wire is O.K. If at circuit breaker #1, #2, #5, or #6, go to step 7. If at circuit breaker #7 or #8, go to step 5.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector (see paragraph 4-17). If malfunction still exists, and if at circuit breaker #1, #2, #5, or #6, go to step 7. If at circuit breaker #7 or #8, go to step 5.

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

NOTE

Perform step 4 if at circuit breaker #3, #4, or #9 (24-volt circuit).

Step 4. Check for continuity in wire between circuit breaker post and pin at front of 24-volt electrical connector.

If there is continuity, that wire is O.K. Go to step 7.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector (see paragraph 4-17). If malfunction still exists, go to step 7.

NOTE

Perform step 5 if affected light operates on circuit breaker #7 or #8 and malfunction occurred when semitrailer was connected to 24-volt intervehicular cable.

Step 5. Check for continuity in wire between pin #3 or #5 of 12-volt electrical connector and resistor. Check for continuity in wire between resistor and pin B or J at front of 24-volt electrical connector.

If there is continuity, that wire is O.K. Go to step 6.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector (see paragraph 4-17). If malfunction still exists, go to step 6.

NOTE

Testing of each resistor, located on cover of voltage control unit, is the same.

Step 6. Check resistor. Reading should be within range of 6-8 ohms.

If reading is within range of 6-8 ohms, resistor is O.K. Go to step 7.

If reading is not within range of 6-8 ohms, replace resistor (see paragraph 4-15). If malfunction still exists, go to step 7.

Step 7. At each affected light, remove lamp from light socket (see paragraph 4-18). Check lamp.

If there is no continuity, replace lamp (see paragraph 4-18).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 8. At each affected light, check continuity between ground side of light socket and frame. DO NOT remove light housing while making this check (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

If there is continuity, proceed to step 9.

If there is no continuity, check light for damaged or corroded housing. Check for loose or corroded screws mounting light to semitrailer. If screws are loose, tighten. If any component is damaged or corroded, replace (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

Step 9. At each affected light, visually check button contacts inside light socket for looseness, corrosion, or other damage.

If button contacts are loose, corroded, or otherwise damaged, replace (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

NOTE

- **Use an extension wire, as required, long enough to reach between connectors.**
- **Location of connectors will vary with light being checked. If connector is inside light box at rear of semitrailer, stop/taillight must be removed (see paragraph 4-20). If connector is at side clearance and marker light, cover of condulet must be removed (see paragraph 4-25).**

Step 10. At each affected light, trace circuit between button contact at light socket and first connector. Check continuity in wire between button contact and first connector. Check for a short in same length of wire. Check for loose, disconnected, or damaged connectors and wires.

If there is continuity, that length of wire is O.K.

If there is no continuity or if wire is shorted, replace wire (see paragraphs 4-20, 4-21, 4-24 through 4-26, or 4-28).

Step 11. Check for continuity and a short in wire between first connector and next connector. Repeat wire checks until circuit breaker in voltage control unit at front of semitrailer is reached. Check for loose, disconnected, or damaged connectors and wires.

If there is no continuity, or if wire is shorted, replace wire (see paragraph 4-29).

Step 12. If malfunction still exists, replace voltage control unit (see paragraph 4-14).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. LIGHT FLICKERS

WARNING

When troubleshooting an electrical malfunction, ALWAYS disconnect intervehicular cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- **Refer to paragraph 4-30 to determine routing of electrical wires and location of electrical components.**
- **To ensure an accurate reading, probes of multimeter must contact bare wire and unpainted metal surfaces.**
- **Flickering lights are most often caused by loose or corroded connectors. Check for these conditions while performing the troubleshooting steps.**

Step 1. Check that affected lamp is not loose in light socket (see paragraph 4-18).

Install lamp securely in light socket (see paragraph 4-18).

Step 2. Repeat steps 2-11 of Malfunction 1, “Single Light Does Not Operate”.

4. CONVOY WARNING LIGHT DOES NOT OPERATE

WARNING

When troubleshooting an electrical malfunction, ALWAYS disconnect intervehicular cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- **Refer to paragraph 4-30 to determine routing of electrical wires and location of electrical components.**
- **To ensure an accurate reading, probes of multimeter must contact bare wire and unpainted metal surfaces.**

Step 1. Check continuity in blue wire between pin #7 at front of 12-volt electrical connector and outside post of circuit breaker #2.

If there is continuity, that wire is O.K. Go to step 2.

If there is no continuity, replace wire (see paragraph 4-17). While replacing wire, visually inspect for a bent or corroded connector pin. If pin is damaged, replace electrical connector (see paragraph 4-17). If malfunction still exists, go to step 2.

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Check circuit across posts of circuit breaker #2.

If there is continuity, circuit breaker is O.K. Go to step 3.

If there is no continuity, replace circuit breaker (see paragraph 4-16). If malfunction still exists, go to step 3.

NOTE

- **Use an extension wire long enough to reach between connectors.**
- **Cover of condulet at side clearance and marker light must be removed to gain access to connector at side clearance and marker light (see paragraph 4-25).**

Step 3. Check for continuity and a short in blue wire between inside post of circuit breaker #2 and connector at side clearance and marker light. Check for loose, disconnected, or damaged wire and connector.

If there is continuity, that length of wire is O.K. Go to step 4.

If there is no continuity, or if wire is shorted, replace wire (see paragraph 4-29). If malfunction still exists, go to step 4.

Step 4. Remove stop/taillight from light box to gain access to convoy warning light toggle switch and wiring (see paragraph 4-20). Check for continuity and a short in blue wire assembly between connector at side clearance and marker light and terminal (closest to roadside) of toggle switch.

If there is continuity, blue wire assembly is O.K. Go to step 5.

If there is no continuity, or if blue wire assembly is shorted, replace (see paragraph 4-29). If malfunction still exists, go to step 5.

Step 5. Turn convoy warning light toggle switch on (see paragraph 2-2). Check for continuity across terminals of convoy warning light toggle switch.

If there is continuity, toggle switch is O.K. Go to step 6.

If there is no continuity, replace toggle switch (see paragraph 4-22). If malfunction still exists, go to step 6.

Step 6. Remove cover from condulet at rear dam (see paragraph 4-22). Ensure that convoy warning light toggle switch is turned on (see paragraph 2-2). Check for continuity and a short in blue wire assembly between terminal of toggle switch and connector inside condulet.

If there is continuity, blue wire assembly is O.K. Go to step 7.

If there is no continuity, or if blue wire assembly is shorted, remove convoy warning light conduit and replace blue wire assembly (see paragraph 4-29). If malfunction still exists, go to step 7.

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 7. Check continuity in brown wire assembly between ground terminal at blackout light and connector inside condulet at rear dam.

If there is continuity, brown wire assembly is O.K. Go to step 8.

If there is no continuity, check for loose or corroded mounting hardware where brown wire assembly is grounded at blackout light (see paragraph 4-19). Check for a loose or damaged ground terminal at blackout light end of brown wire. If mounting hardware at blackout light is loose, tighten. If mounting hardware is corroded or otherwise damaged, replace (see paragraph 4-19). Repair or replace brown wire assembly as required (see paragraph 4-29). If malfunction still exists, go to step 8.

NOTE

White receptacle wire connects pin #1 of receptacle to brown wire assembly inside condulet. Black receptacle wire connects pin #2 of receptacle to blue wire assembly inside condulet.

Step 8. Check for continuity and a short in white and black receptacle wires inside condulet at rear dam.

If both white and black receptacle wires have continuity, receptacle with wires is O.K. Go to step 9.

If there is no continuity in either or both wires, or if a wire is shorted, replace receptacle with wires (see paragraph 4-22). If malfunction still exists, go to step 9.

NOTE

Pin #1 of cable's male plug corresponds to white cable wire. Pin #2 corresponds to black cable wire.

Step 9. Remove dome from convoy warning light. Unplug terminals of white and black cable wires from convoy warning light (see paragraph 4-23). Check for continuity and a short in cable.

If there is continuity, cable is O.K. Replace convoy warning light (see paragraph 4-23).

If there is no continuity, or if cable is shorted, replace cable (see paragraph 4-23). If malfunction still exists, replace convoy warning light (see paragraph 4-23).

Step 10. Troubleshoot tractor electrical system (see TM 9-2320-273-20 or TM 9-2320-283-20).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

BRAKES

5. BRAKES WILL NOT RELEASE

Step 1. Check brake adjustment (see paragraph 4-34).

Adjust brakes (see paragraph 4-34).

Step 2. Remove wheel and drum assembly (see paragraph 4-46). Inspect brake shoe assembly for damage (see paragraph 4-35).

If brake shoes are damaged, replace' (see paragraph 4-35).

6. BRAKES GRAB

Step 1. Check brake adjustment (see paragraph 4-34).

Adjust brakes (see paragraph 4-34).

Step 2. Check for damage to brake chamber (see paragraph 4-40).

If brake chamber is damaged, replace (see paragraph 4-40).

Step 3. Check for leaking or broken air line between ratio relay valve and brake chamber (see paragraph 4-39).

If air line is leaking or broken, replace (see paragraph 4-39).

Step 4. Remove wheel and drum assembly (see paragraph 4-46). Inspect brake shoe assembly for wear or damage (see paragraph 4-35). Inspect linings for oil, grease, or foreign material.

If brake shoe linings measure ¼ in. (6.35 mm) or less at their thinnest point, if brake shoes are damaged, or if linings are oil or grease soaked, replace brake shoes (see paragraph 4-35).

Step 5. Notify direct support maintenance to check drum for out-of-round condition.

7. BRAKES DRAG

Step 1. Check brake adjustment (see paragraph 4-34).

Adjust brakes (see paragraph 4-34).

Step 2. Remove wheel and drum assembly and inspect drum for damage (see paragraph 4-46). Inspect brake shoe assembly for damage (see paragraph 4-35).

If brake shoes are damaged, replace (see paragraph 4-35).

If drum is damaged, replace (see paragraph 4-46).

Step 3. Notify direct support maintenance to check drum for out-of-round condition.

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

8. SLOW BRAKE APPLICATION OR RELEASE

Step 1. Check for proper lubrication at camshaft and slack adjuster grease fittings (see Chapter 3, Section I).

Lubricate according to instructions in Chapter 3, Section I.

Step 2. Check brake adjustment (see paragraph 4-34).

Adjust brakes (see paragraph 4-34).

Step 3. Check for kinks or restrictions in air lines (see paragraph 4-39).

WARNING

Compressed air used for clearing restrictions must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

Use compressed air to clear any restrictions. If restrictions cannot be removed, or if airline is kinked, replace affected air line (see paragraph 4-39).

Step 4. Check for defective relay quick release valve (see paragraph 4-41).

If relay quick release valve is defective, replace (see paragraph 4-41).

WHEELS AND TIRES

9. NOISY OR WOBBLY TIRE AND RIM ASSEMBLIES

Step 1. Inspect for bent spacer (see paragraph 4-45).

If spacer is bent, replace (see paragraph 4-45).

Step 2. Check rim alinement (see paragraph 4-48).

Aline rim as required (see paragraph 4-48).

Step 3. Check wheel bearing adjustment (see paragraph 4-47).

Adjust wheel bearings as required (see paragraph 4-47).

Step 4. Check for worn or damaged wheel bearings (see paragraph 4-46).

If wheel bearings are worn or damaged, replace (see paragraph 4-46).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 5. Inspect wheel for damage (see paragraph 4-46). Inspect rim for damage (see paragraphs 4-45 and 4-49).

If wheel is damaged, replace (see paragraph 4-46). If rim is damaged, replace (see paragraph 4-49).

Step 6. Check for bent axle (see paragraph 4-32).

If axle is bent, notify direct support maintenance to replace axle.

10. LOSS OF TIRE AIR PRESSURE

Step 1. Remove tire (see paragraph 4-45). Inspect tire for cuts, gouges, cracks, or sidewall damage.

If tire is damaged, replace (see paragraph 4-45).

Repair damaged tire (see paragraph 4-49).

Step 2. Inspect valve stem for damage (see paragraphs 4-45 and 4-49).

If valve stem is damaged, replace (see paragraph 4-49).

Step 3. Inspect rim for damage (see paragraphs 4-45 and 4-49).

If rim is damaged, replace (see paragraph 4-49).

Step 4. Remove wheel and drum assembly (see paragraph 4-46). Inspect wheel for damage.

If wheel is damaged, replace (see paragraph 4-46).

11. UNEVEN TIRE WEAR

Step 1. Remove tire (see paragraph 4-45). Inspect for bent spacer.

If spacer is bent, replace (see paragraph 4-45).

Step 2. Inspect for bent rim (see paragraphs 4-45 and 4-49).

If rim is bent, replace (see paragraph 4-49).

Step 3. Check brake adjustment (see paragraph 4-34).

Adjust brakes (see paragraph 4-34).

Step 4. Visually inspect all brake operating parts: brake chamber, brake chamber pushrod, slack adjuster, and camshaft (see paragraphs 4-36, 4-37, and 4-40).

Lubricate brake operating parts as required (see Chapter 3, Section I). Replace any damaged components (see paragraphs 4-36, 4-37, and 4-40).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 5. Check wheel bearing adjustment (see paragraph 4-47).

Adjust wheel bearings (see paragraph 4-47).

Step 6. Check axle alinement (see paragraph 4-31).

Aline axles (see paragraph 4-31).

Step 7. Check for bent axle (see paragraph 4-32).

If axle is bent, notify direct support maintenance to replace axle.

12. DUAL TIRES RUBBING

Step 1. Remove tire (see paragraph 4-45). Inspect for bent spacer.

If spacer is bent, replace (see paragraph 4-45).

Step 2. Inspect for bent rim (see paragraphs 4-45 and 4-49).

If rim is bent, replace (see paragraph 4-49).

SUSPENSION

13. SEMITRAILER OUT OF ALINEMENT WITH TRACTOR (DOG TRAILING)

Step 1. Inspect spring leaves for breaks or cracks (see paragraph 4-56).

If breaks or cracks are found, replace springs on each end of axle (see paragraph 4-56).

Step 2. Check to see if U-bolts are loose and springs are out of alinement in frame hangers (see paragraph 4-56).

Loosen U-bolt nuts. Tap on springs to aline in frame hangers. Torque U-bolt nuts in a diagonal sequence to 360 lb.-ft. (488 N•m) (see paragraph 4-56).

Step 3. Check axle alinement (see paragraph 4-31).

Aline axles (see paragraph 4-31).

Step 4. Check for bent axle (see paragraph 4-32).

If axle is bent, notify direct support maintenance to replace axle.

14. IMPROPER SPRING ACTION

Step 1. Inspect spring leaves for breaks or cracks (see paragraph 4-56).

If breaks or cracks are found, replace springs on each end of axle (see paragraph 4-56).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Inspect for flattened, weak spring (see paragraph 4-56).

If spring is flattened or weak, replace springs on each end of axle (see paragraph 4-56).

Step 3. Check to see if U-bolts are loose and springs are out of alinement in frame hangers (see paragraph 4-56).

Loosen U-bolt nuts. Tap on springs to aline in frame hangers. Torque U-bolt nuts in a diagonal sequence to 360 lb.-ft. (488 N•m) (see paragraph 4-56).

15. SEMITRAILER PULLS HARD, DRAGS, OR RESISTS ROLL

Step 1. Inspect spring to see if center bolt is broken or sheared and spring is out of alinement in frame hanger. Inspect spring leaves for breaks or cracks (see paragraph 4-56).

If any damage is found, replace springs on each end of axle (see paragraph 4-56).

Step 2. Inspect U-bolt nuts for looseness (see paragraph 4-56).

Torque U-bolt nuts in a diagonal sequence to 360 lb.-ft. (488 N•m) (see paragraph 4-56).

Step 3. Check axle alinement (see paragraph 4-31).

Aline axles (see paragraph 4-31).

Step 4. Check for bent axle (see paragraph 4-32).

If axle is bent, notify direct support maintenance to replace axle.

LANDING GEAR

16. DIFFICULT OPERATION

Step 1. Check for proper lubrication (see Chapter 3, Section I).

Lubricate according to instructions in Chapter 3, Section I.

Step 2. Inspect handcrank for damage (see paragraph 4-52).

Replace handcrank (see paragraph 4-52).

Step 3. Inspect cross-shaft for damage (see paragraph 4-52).

Replace cross-shaft (see paragraph 4-52).

Step 4. Inspect gearbox on curbside landing gear leg for damage (see paragraph 4-52).

If damaged, replace curbside landing gear leg (see paragraph 4-52).

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 5. Inspect for bent landing gear legs (see paragraph 4-52).

Replace affected landing gear leg (see paragraph 4-52).

Step 6. Check to see that landing gear is not already fully extended or retracted.

Step 7. Check to see that semitrailer is fully uncoupled from tractor (see paragraph 2-14).

EMERGENCY VALVE AND VAPOR VENT CABLE CONTROLS

17. IMPROPER OPERATION

Step 1. Inspect emergency valve operator control levers in cabinet for damage (see paragraph 4-74). Inspect emergency valve remote trip-release for damage (see paragraph 4-75).

Replace if damaged (see paragraphs 4-74 and 4-75).

Step 2. Trace emergency valve and vapor vent cable and tubing assembly between points of operation. Check for proper lubrication at union of grease fittings (see paragraph 4-76).

Lubricate as required (see Chapter 3, Section I).

Step 3. Trace emergency valve and vapor vent cable and tubing assembly between points of operation. Check for breaks, kinks, or frays in cable and tubing assembly, or looseness or damage to cable and tubing connections at vapor vent and emergency valve (see paragraph 4-76).

Tighten or replace damaged components (see paragraph 4-76). Adjust length of cable at BOTH ends as required (see paragraph 4-74).

Step 4. If internal damage to vapor vent or emergency valve is suspected, replace (see paragraphs 4-81 or 4-82).

EMERGENCY VALVE/JET LEVEL SENSOR

18. NO FLOW INTO TANK WHEN BOTTOM LOADING

Step 1. Stop bottom loading (see paragraph 2-19). Check strainer assembly for obstruction (see paragraph 4-71).

Service strainer assembly (see paragraph 4-71).

Step 2. Resume bottom loading. Place a suitable container under bleeder valve. Remove nut at bleeder valve (see paragraph 2-19). Check if fuel is flowing from bleeder valve.

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

NOTE

An inadequate flow is defined as a flow that is not a strong, full diameter flow. An adequate flow will fill a gallon container at least half full within approximately one minute.

If there is no flow, or if flow is inadequate, or full of air and spitting, problem is in jet level sensor or in jet level sensor tubing. Go to step 3.

If there is an adequate steady flow of fuel, problem is NOT in jet level sensor or in jet level sensor tubing. Problem is in emergency valve. Remove emergency valve and repair. Be sure to replace all preformed packings (see paragraph 4-82).

Step 3. Remove manhole lid (see paragraph 4-67). Purge tank (see paragraph 4-68). Remove jet level sensor (see paragraph 4-70). Inspect jet level sensor for restricted orifices or for other damage. Look for dirt or other contaminants clogging the two orifices.

Clean jet level sensor and remove any dirt or other contaminants that are clogging the orifices. If jet level sensor is damaged, obtain a replacement. Install jet level sensor, but leave jet level sensor tubing disconnected (see paragraph 4-70). Go to step 4.

If jet level sensor orifices are not restricted and no other damage is observed, problem is in tubing between emergency valve and jet level sensor. Install jet level sensor, but leave jet level sensor tubing disconnected (see paragraph 4-70). Go to step 4.

WARNING

Compressed air used for clearing tubing must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

Step 4. At emergency valve, remove nut from bleeder valve. Tag and disconnect all jet level sensor tubing from emergency valve and strainer assembly (see paragraph 4-70). From emergency valve end, force clean compressed air into all tubing lengths. Have an assistant positioned at jet level sensor end. Assistant should hold a clean rag (Item 18, Appendix E) against ends of tubing as air is forced through and should look for signs of escaping dirt or other contaminants. Assistant should also check that air flow through tubing indicates that tubing is free of restrictions or leaks.

If jet level sensor tubing can be cleared with compressed air, connect tubing at jet level sensor. Install nut at bleeder valve and connect jet level sensor tubing at emergency valve and strainer assembly (see paragraph 4-70). Go to step 5.

If jet level sensor tubing cannot be cleared or air flow through tubing indicates a restriction or a leak, perform a visual inspection of tubing between jet level sensor and emergency valve inside tank. Replace damaged tubing (see paragraph 4-70). Go to step 5.

Table 4-2. Unit Troubleshooting Procedures (Con't).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 5. If semitrailer is new or has been steam purged and the temperature is below freezing, malfunction may have been caused by freezing in jet level sensor tubing or in pilot valve on top of emergency valve. While troubleshooting, thawing will most likely occur and no evidence of freezing may be discovered.

To safeguard against a recurrence of freezing, winterize bottom loading system (see paragraph 4-84).

Step 6. If cause of malfunction has still not been determined, remove pilot valve and repair, Look for damage to diaphragm (see paragraph 4-83).

19. NO SHUTOFF WHEN BOTTOM LOADING AFTER TANK IS FULL

Step 1. Check emergency valve control lever in cabinet to ensure that it is closed (see paragraph 2-2). Automatic shutoff of bottom loading system will not occur with emergency valve control lever set in the open position.

Push emergency valve control lever to close (see paragraph 2-2).

Step 2. Remove pilot valve and replace pilot valve diaphragm (see paragraph 4-83).

Step 3. Remove and repair emergency valve. Be sure to replace all preformed packings (see paragraph 4-82).

PRECHECK SYSTEM

20. EMERGENCY VALVE DOES NOT CLOSE WITHIN TWO MINUTES OF START OF PRECHECK CYCLE

WARNING

- **DO NOT breathe fuel fumes. They are toxic and can cause serious medical problems. Failure to follow this warning may result in serious injury or death to personnel.**
- **Give IMMEDIATE medical attention to personnel exposed to hydrocarbon or toxic vapors. Signs of distress are weakness, nausea, coughing or intoxication, nosebleed or cramps, or other unusual symptoms. Qualified personnel able to administer artificial respiration and simple first aid must be present.**

Step 1. Open manhole fill cover (see paragraph 2-16). Check that precheck tubing is properly connected to jet level sensor (see paragraph 4-70).

If precheck tubing is connected to jet level sensor, go to step 2.

If precheck tubing is disconnected, connect precheck tubing to jet level sensor (see paragraph 4-70).

Table 4-2. Unit Troubleshooting Procedures (Con"t).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. While bottom loading, disconnect precheck tubing from jet level sensor (see paragraph 4-70). Check fuel flow in precheck tubing. Flow should be a strong, full diameter flow.

If flow is a strong, full diameter flow, go to step 4.

If flow is not a strong, full diameter flow, precheck tubing is either restricted or leaking. Go to step 3.

WARNING

Compressed air used for clearing restrictions must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

NOTE

A suitable container must be used to catch any draining fuel. Ensure that all spills are cleaned up.

Step 3. From outside of tank, disconnect precheck tubing from coupling located in tank shell, elbows at piping assembly, and elbow at pressure gage (see paragraph 4-72). Open precheck valve (see paragraph 2-2). If handle of precheck valve turns with difficulty, problem may be in precheck valve. Use compressed air to clear any restrictions in precheck tubing and to check for leaks.

If no restrictions, leaks, or damage are found, go to step 4.

If precheck tubing can be cleared of restrictions, if no leaks are found, and if handle of precheck valve operates without difficulty, connect all precheck tubing (see paragraph 4-72).

If any length of precheck tubing cannot be cleared of restrictions, if leaks are found, or if handle of precheck valve operates with difficulty, replace affected component (see paragraph 4-72).

Step 4. Purge tank (see paragraph 4-68). Remove jet level sensor (see paragraph 4-70). Check for a cracked precheck can inside jet level sensor. Precheck can (smaller inside can) should have two smaller and one larger plugged hole in bottom of can. Check that proper holes are plugged.

If there is no damage to jet level sensor, go to step 5.

If jet level sensor is damaged, replace (see paragraph 4-70).

Table 4-2. Unit Troubleshooting Procedures (Con?).

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

WARNING

Compressed air used for clearing restrictions must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

Step 5. Disconnect precheck tubing inside tank from jet level sensor and check valve (see paragraph 4-72). Use compressed air to clear restrictions in precheck tubing and to check for leaks.

If no restrictions or leaks are found, go to step 6.

If precheck tubing can be cleared of restrictions and no leaks are found, connect precheck tubing to jet level sensor and check valve (see paragraph 4-72).

If precheck tubing cannot be cleared of restrictions or if leaks are found, replace tubing (see paragraph 4-72).

Step 6. Inspect check valve for proper installation. Check valve must be installed with arrow pointing to inside of tank (see paragraph 4-72).

If check valve is correctly installed, go to step 7.

If incorrectly installed, install check valve in proper direction (see paragraph 4-72).

WARNING

Compressed air used for clearing restrictions must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

Step 7. Remove check valve (see paragraph 4-72). Check for cracks or other damage. Depress check valve and check for free movement. Direct compressed air through inlet of valve; compressed air should pass through to outlet. Direct compressed air through outlet of valve: no compressed air should pass through to inlet.

If check valve is damaged, replace (see paragraph 4-72).

21. EMERGENCY VALVE DOES NOT OPEN TO ALLOW BOTTOM LOADING AFTER PRECHECK CYCLE COMPLETED

Purge tank (see paragraph 4-68). Remove emergency valve and pilot valve (see paragraphs 4-82 and 4-83).

Repair emergency valve and pilot valve (see paragraphs 4-82 and 4-83).

Section V. ELECTRICAL SYSTEM MAINTENANCE

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4-17	12-Volt and 24-Volt Electrical Connector Replacement	4-40
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4-14. VOLTAGE CONTROL UNIT REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

- Eight locknuts
- Eight starwashers
- Corrosion preventive compound (Item 7, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

4-14. VOLTAGE CONTROL UNIT REPLACEMENT (Con"t).

a. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) Loosen two screws (10) and open voltage control unit cover (3). Prop cover open with cable from a dummy coupling.

NOTE

Tag wires for installation.

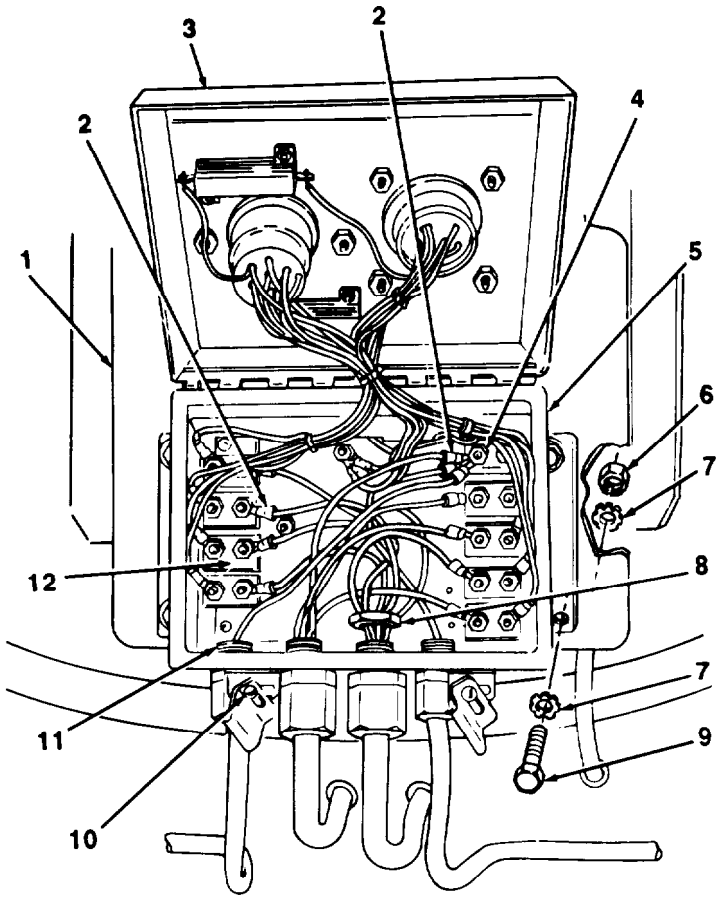
(2) Remove 18 nuts (4) and disconnect all terminals (2) from inside posts of circuit breakers (12).

(3) Remove four locknuts (8) from connectors (11). Discard locknuts.

CAUTION

Use caution not to damage wires and terminals.

(4) Remove four locknuts (6), eight starwashers (7), and four screws (9). Lift voltage control unit (5) from nose adapter (1). Discard locknuts and starwashers.



4-14. VOLTAGE CONTROL UNIT REPLACEMENT (Con?).

b. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Ensure that all wire connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.

(1) Thread wires through holes in bottom of voltage control unit (5). Install four connectors (11) to voltage control unit (5) with four new locknuts (8). For ease of installation, install outer locknuts first.

(2) Install voltage control unit (5) to nose adapter (1) with four screws (9), eight new starwashers (7), and four new locknuts (6).

(3) Refer to paragraph 4-30, Wiring Diagrams, and connect all terminals (2) to circuit breakers (12). Install 18 nuts (4).

(4) Close voltage control unit cover (3) and tighten two screws (10).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of lights (see TM 9-2320-273-10 or TM 9-2320-283-1 0).

4-15. RESISTOR REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-14 Voltage control unit removed.

Tools:

- Shop equipment, automotive maintenance and repair, organizational maintenance, common no. 1
- Soldering gun

Materials/Parts:

- Two lockwashers
- Solder (Item 19, Appendix E)

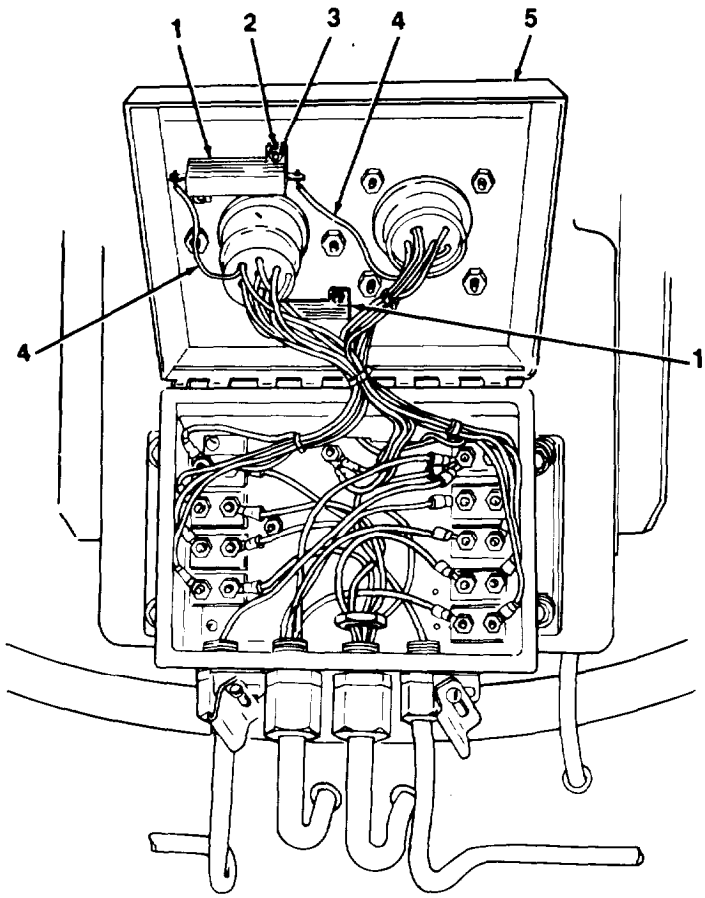
a. REMOVAL

NOTE

There are two resistors (1) mounted to voltage control unit cover (5). Each resistor is removed the same.

(1) Unsolder two wires (4) from resistor (1) .

(2) Remove two nuts (2), lockwashers, and screws (3). Remove resistor (1) from voltage control unit cover (5). Discard lockwashers.



b. INSTALLATION

NOTE

There are two resistors (1) mounted to voltage control unit cover (5). Each resistor is installed the same.

(1) Install resistor (1) to voltage control unit cover (5) with two screws (3), new lockwashers, and nuts (2).

4-15. RESISTOR REPLACEMENT (Con't).

NOTE

Refer to paragraph 4-30, Wiring Diagrams, for proper connection of wires (4).

(2) Solder two wires (4) to resistor (1).

FOLLOW-ON TASKS:

- Install voltage control unit (see paragraph 4-14).
- Check operation of lights (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-16. CIRCUIT BREAKER REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
2-14 Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

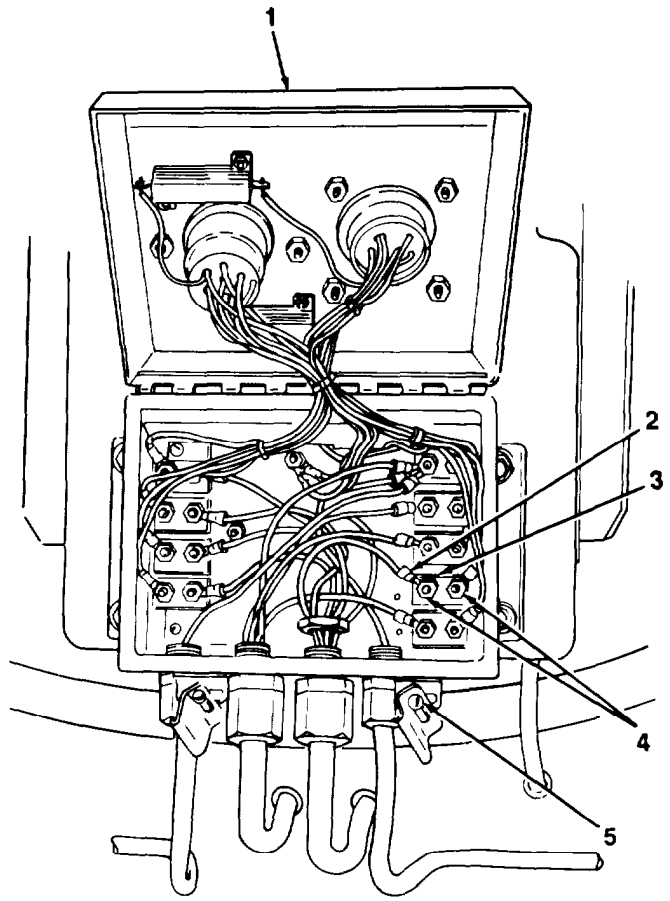
NOTE

Note location of terminals (2) for installation.

(1) Loosen two screws (5) and open voltage control unit cover (1). Prop cover open with cable from a dummy coupling.

(2) Remove four nuts (4) and disconnect two terminals (2) from circuit breaker (3).

(3) Remove circuit breaker (3).



4-16. CIRCUIT BREAKER REPLACEMENT (Con"t).

b. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) Install circuit breaker (3).

(2) Connect two terminals (2) to circuit breaker (3) with four nuts (4).

(3) Close voltage control unit cover (1) and tighten two screws (5).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of lights (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-17. 12-VOLT AND 24-VOLT ELECTRICAL CONNECTOR REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

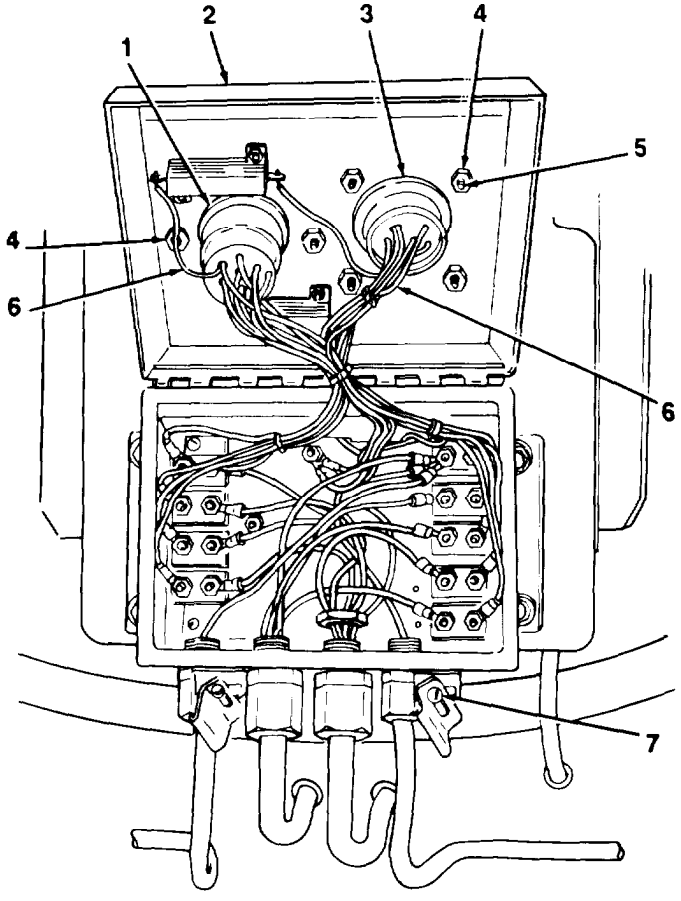
NOTE

12-volt electrical connector (1) and 24-volt electrical connector (3) are removed the same, except for the specific wire connections and the number of mounting hardware.

(1) Loosen two screws (7) and open voltage control unit cover (2). Prop open cover with cable from a dummy coupling.

(2) Tag all wires (6) that connect to electrical connector (1 or 3) to be removed.

(3) Close voltage control unit cover (2). Push pins through electrical connector (1 or 3) and remove.



4-17. 12-VOLT AND 24-VOLT ELECTRICAL CONNECTOR REPLACEMENT (Con't).

(4) If removing 12-volt electrical connector (1), remove two nuts (4) and bolts (5), and remove electrical connector. If removing 24-volt electrical connector (3), remove four nuts and bolts, and remove electrical connector.

(5) Remove pins from tagged wires (6).

b. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

12-volt electrical connector (1) and 24-volt electrical connector (3) are installed the same, except for the specific wire connections and the number of receptacle mounting hardware.

(1) If installing 12-volt electrical connector (1), position at curbside hole in voltage control unit cover (2) and install two bolts (5) and nuts (4). If installing 24-volt electrical connector (3), position at roadside hole in voltage control unit and install four bolts and nuts.

NOTE

Refer to paragraph 4-30, Wiring Diagrams, for information on electrical routing and connections at electrical connectors (1 or 3).

(2) One at a time, push pins from new electrical connector (1 or 3). Connect correct tagged wire (6) to pin and crimp. Reinstall pins in correct slot in electrical connector.

(3) Remove tags from wires (6).

(4) Close voltage control unit cover (2) and tighten two screws (7).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of lights (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-18. LAMP REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions

2-14 Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

- Corrosion preventive compound (Item 7, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

CAUTION

Use caution when removing lens (6).

(1) Use a screwdriver to carefully lift up on lens (3) and remove. Remove lamp (1).

(2) If preformed packing (2) is damaged, replace.

b. INSTALLATION

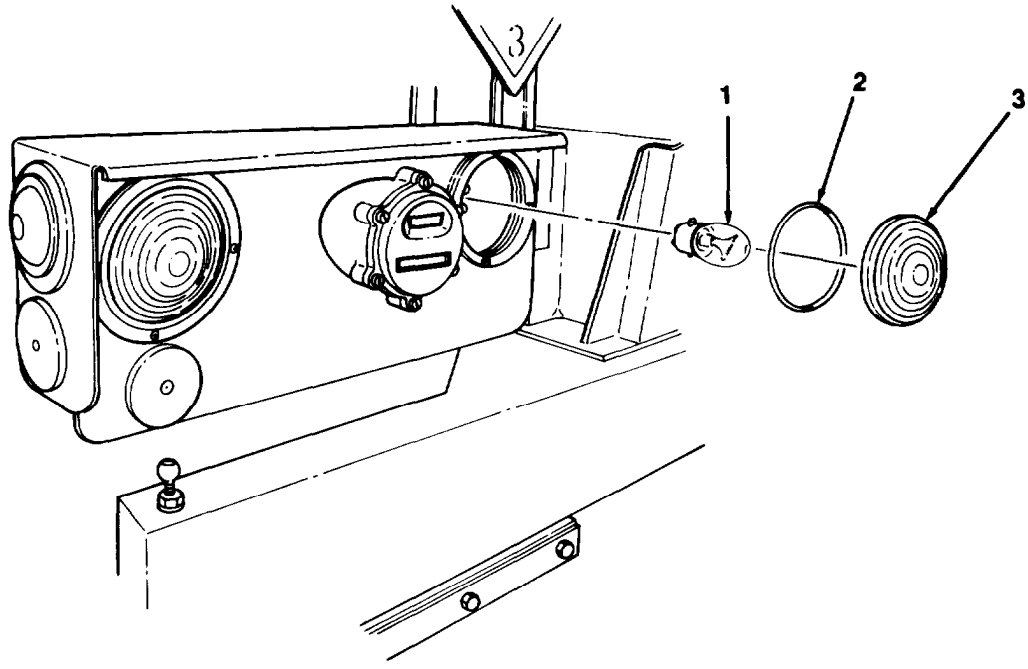
WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) Install lamp (1).

(2) Apply a thin coat of corrosion preventive compound to sealing lip of lens (3). Install lens.

4-18. LAMP REPLACEMENT (Con"t).



FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-19. BLACKOUT LIGHT MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Connector Repair
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Shop equipment, automotive maintenance and repair, organizational maintenance, common no. 1

Materials/Parts:

- Two starwashers
- Corrosion preventive compound (Item 7, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer.

a. REMOVAL

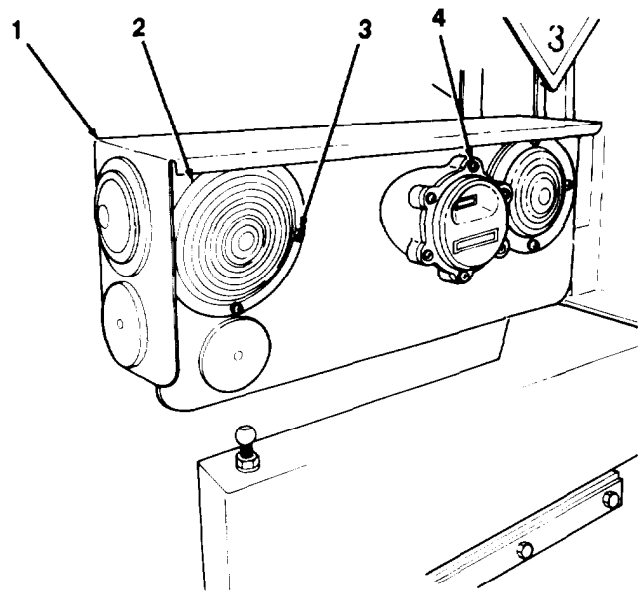
WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Tag wires for installation if other lights at light box are being removed.

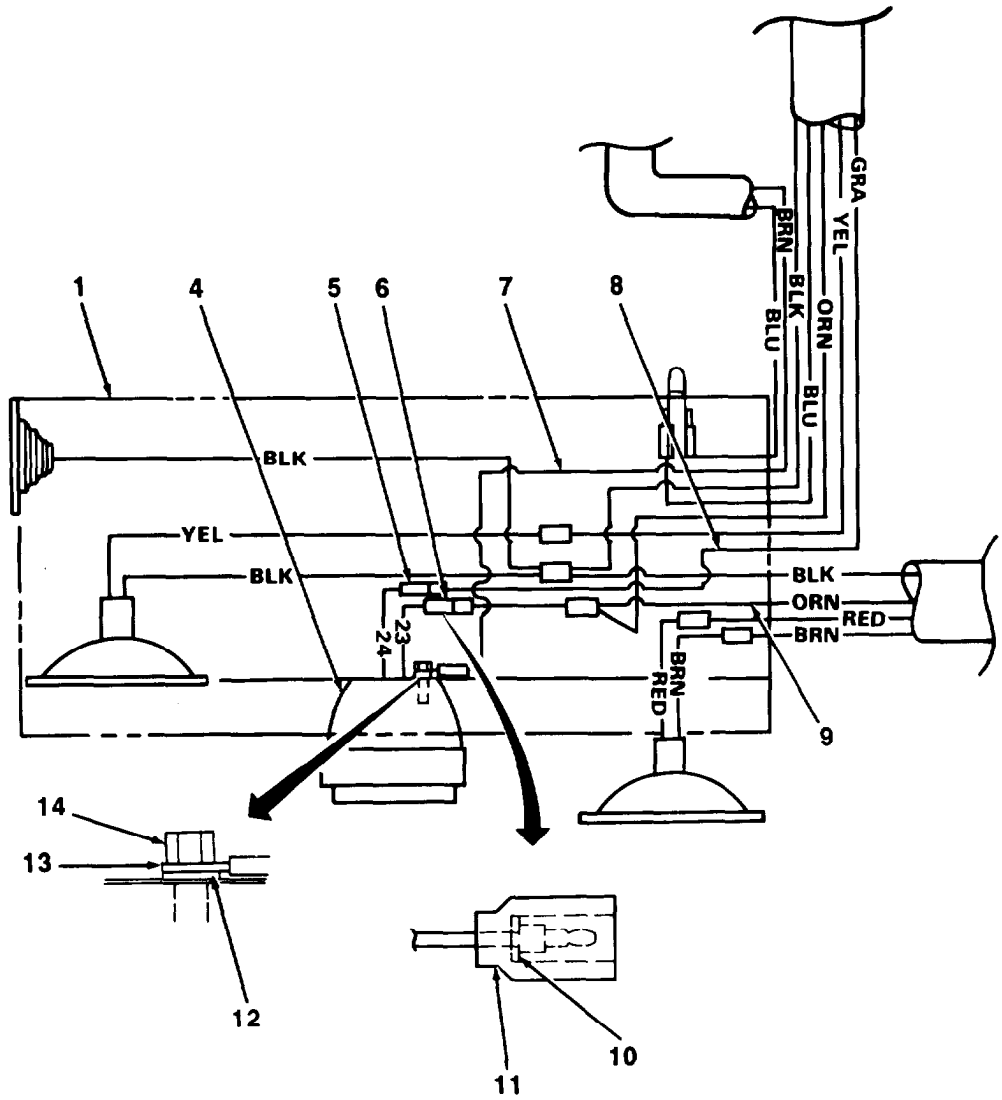
(1) Remove four screws (3) and pull turn signal/taillight (2) from light box (1) enough to gain access to blackout light (4) mounting hardware inside light box.



4-19. BLACKOUT LIGHT MAINTENANCE (Con't).

(2) Reach inside light box (1) and use a 9/16 in. wrench to remove two bolts (14), terminal (13) from convoy warning light brown wire (7), and two starwashers (12). Pull blackout light (4) and wires from light box (1), Discard starwashers.

(3) At connector (5), disconnect blackout light wire assembly #24 from chassis gray wire assembly (8). At connector (6), disconnect blackout light wire assembly #23 from rear conduit orange wire assembly (9).



b. CONNECTOR REPAIR

(1) If damaged, cut connectors (5 and 6) from ends of blackout light (4) wires. Discard connectors.

(2) Manufacture connectors (5 and 6) by assembling C-washer (10) and shell (11) on end of blackout light wires.

4-19. BLACKOUT LIGHT MAINTENANCE (Con"t).

c. INSTALLATION

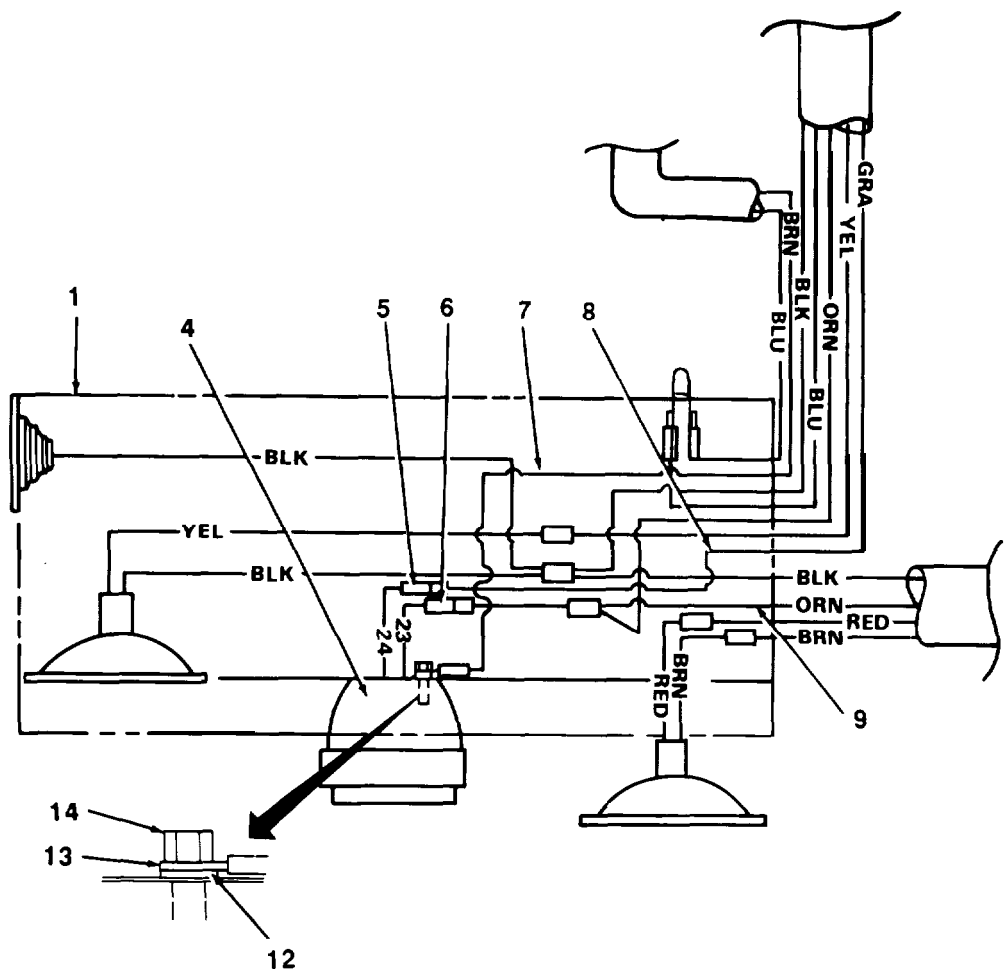
WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Ensure that all wire connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.

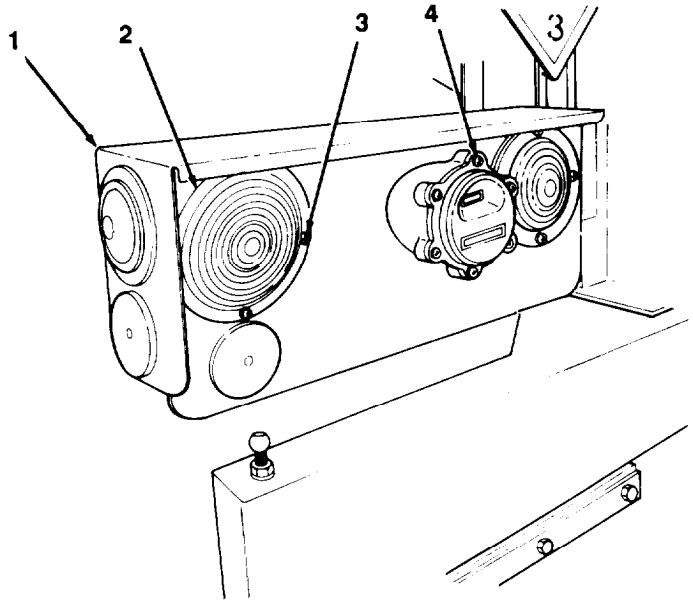
(1) At connector (5), connect blackout light wire assembly #24 to chassis gray wire assembly (8). At connector (6), connect blackout light wire assembly #23 to rear conduit orange wire assembly (9).



4-19. BLACKOUT LIGHT MAINTENANCE (Con"t).

(2) Install blackout light (4) to light box (1) with two new starwashers (12), terminal (13) from convoy warning light brown wire (7), and two bolts (14).

(3) Install turn signal/taillight (2) with four screws (3).



FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-20. STOP/TAILLIGHT MAINTENANCE.

THIS TASK COVERS

Button Contact Repair
Removal

c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- Two button contacts
- Two connectors
- Corrosion preventive compound (Item 7, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. BUTTON CONTACT REPAIR

WARNING

When performing electrical maintenance, ALWAYS disconnect Intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

CAUTION

Use caution not to damage lens (8).

(1) Use a screwdriver to carefully lift up on lens (8) and remove. Remove lamp (7).

(2) Remove four screws (5) and pull stop/taillight (4) away from light box (1) enough to gain access to wiring inside light box.

(3) Loosen two grommets (9) and pull brown wire (2) and red wire (10) through stop/taillight (4).

(4) Cut brown wire (2) and red wire (10) from two button contacts (6).

(5) Install two new button contacts (6) to ends of brown wire (2) and red wire (10). Crimp button contacts.

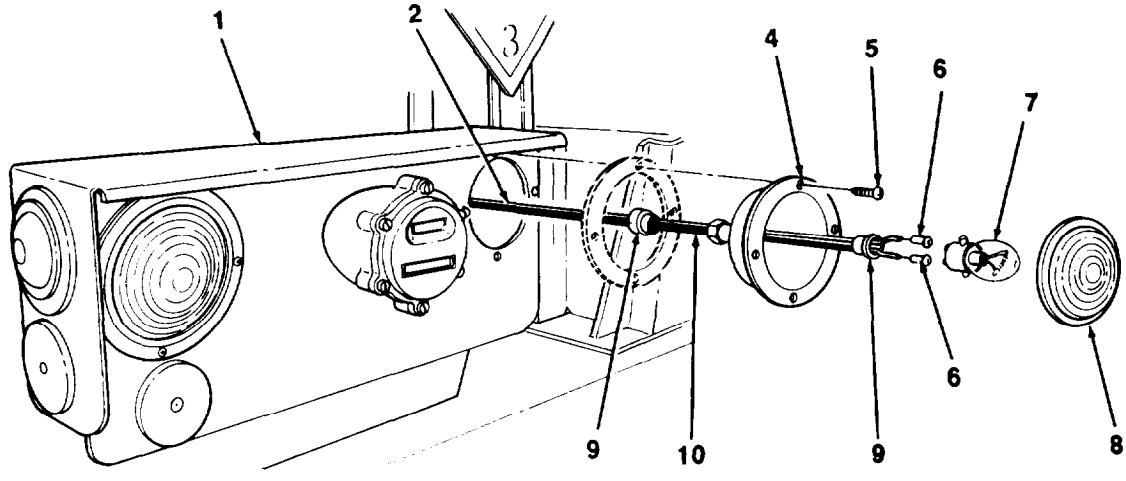
(6) To ensure proper operation of stop/taillight (4), hold stop/taillight so that deeper slot of socket is to the top. Thread brown wire (2) and red wire (10) through two grommets (9). Seat grommets in stop/taillight with red wire to the right.

(7) Install lamp (7).

4-20. STOP/TAILLIGHT MAINTENANCE (Con"t).

(8) Install stop/taillight (4) to light box (1) with four screws (5).

(9) Apply a thin coat of corrosion preventive compound to sealing lip of lens (8). Install lens.



b. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Tag wires for installation if other lights at light box (1) are being removed.

(1) Remove four screws (5) and pull stop/taillight (4) away from light box (1) enough to gain access to wiring inside light box.

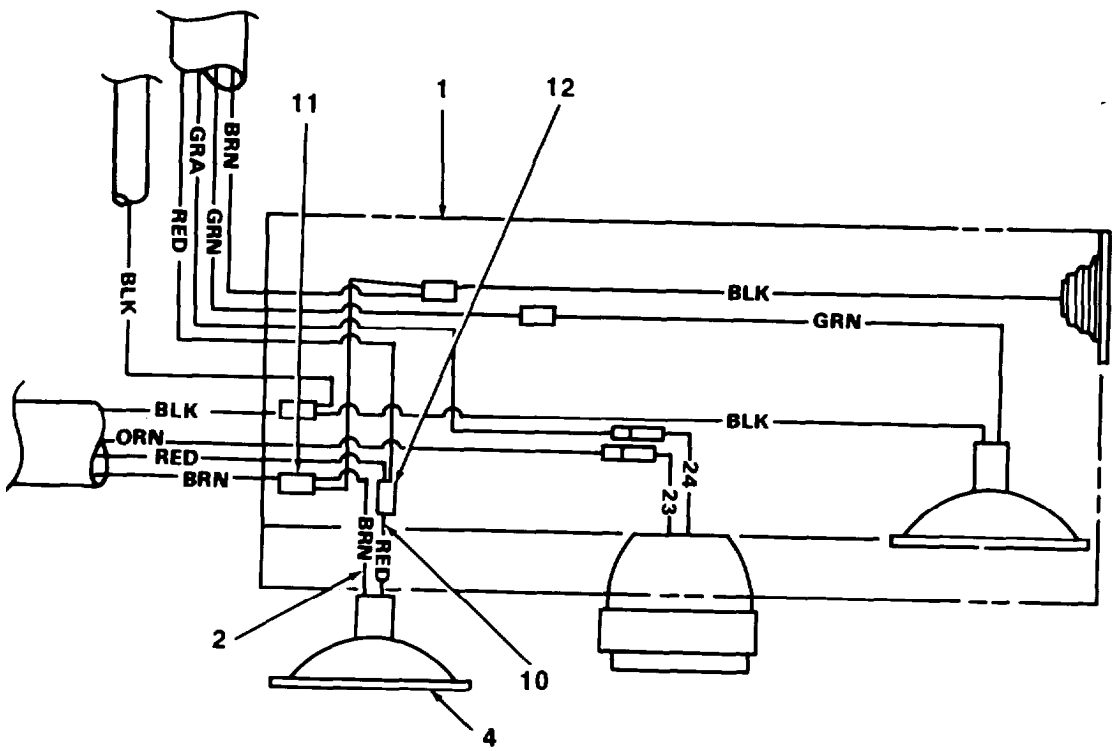
4-20. STOP/TAILLIGHT MAINTENANCE (Con?).

(2) Reach inside light box (1) and cut connector (12) from red wire (10). Discard connector.

NOTE

Curbside stop/taillight has two brown wires (2) at connector (11).

(3) Cut connector (11) from brown wire (2). Discard connector.



(4) Remove stop/taillight (4) from light box (1). If damaged, remove gasket (3) and discard.

4-20. STOP/TAILLIGHT MAINTENANCE (Con"t).

c. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

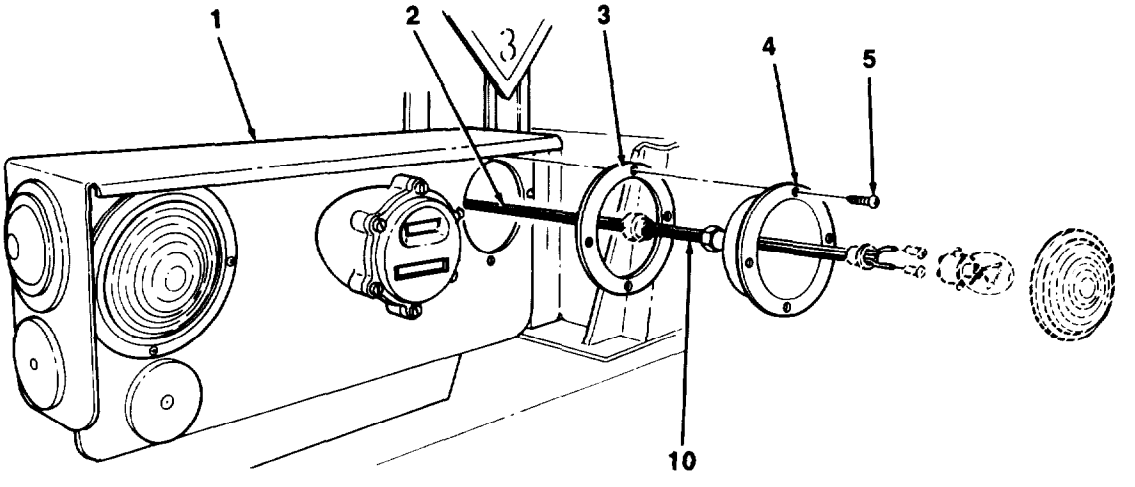
NOTE

- **Ensure that all wire connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.**
- **Curbside stop/taillight has two brown wires (2) at connector (11).**

(1) Connect brown wire (2) from stop/taillight (4) to brown wire inside light box (1). Crimp new connector (11).

(2) Connect red wire (10) from stop/taillight (4) to red wire inside light box (1). Crimp new connector (12).

(3) If removed, install new gasket (3). Install stop/taillight (4) to light box (1) with four screws (5).



FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-21. TURN SIGNAL/TAILLIGHT MAINTENANCE.

THIS TASK COVERS

a. Button Contact Repair
b. Removal
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
2-14 Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire Terminal Kit

Materials/Parts:

- Two button contacts
- Two connectors
- Corrosion preventive compound (Item 7, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. BUTTON CONTACT REPAIR

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

CAUTION

Use caution not to damage lens (9).

(1) Use a screwdriver to carefully lift up on lens (9) and remove. Remove lamp (8).

(2) Remove four screws (4) and pull stop/taillight (5) away from light box (1) enough to gain access to wiring inside light box.

(3) Remove four screws (6) and pull turn signal/taillight (11) from light box (1).

NOTE

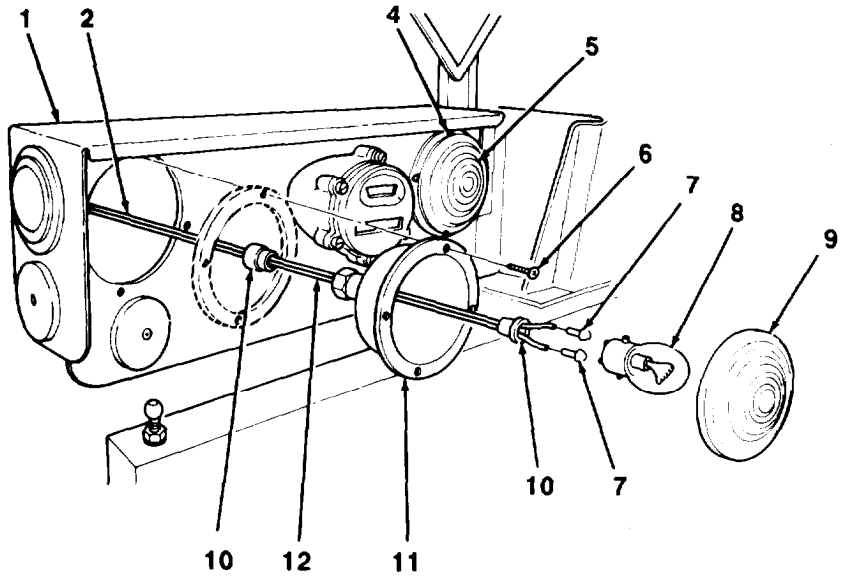
Curbside turn signal/taillight (11) has a green wire instead of a yellow wire (12).

(4) Loosen two grommets (10) and pull black and yellow wires (2 and 12) through turn signal/taillight (11).

(5) Cut black and yellow wires (2 and 12) from two button contacts (7).

(6) Install two new button contacts (7) to black and yellow wires (2 and 12). Crimp button contacts.

4-21. TURN SIGNAL/TAILLIGHT MAINTENANCE (Con"t).



(7) To ensure proper operation of light, hold turn signal/taillight (11) so that deeper slot of socket is to the top. Thread black and yellow wires (2 and 12) through two grommets (10). Seat grommets in socket of turn signal/taillight with yellow wire to the right.

(6) Install lamp (8).

(9) Install turn signal/taillight (11) to light box (1) with four screws (6).

(10) Install stop/taillight (5) to light box (1) with four screws (4).

(11) Apply a thin coat of corrosion preventive compound to sealing lip of lens (9). Install lens.

b. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Tag wires for installation if other lights at light box (1) are being removed.

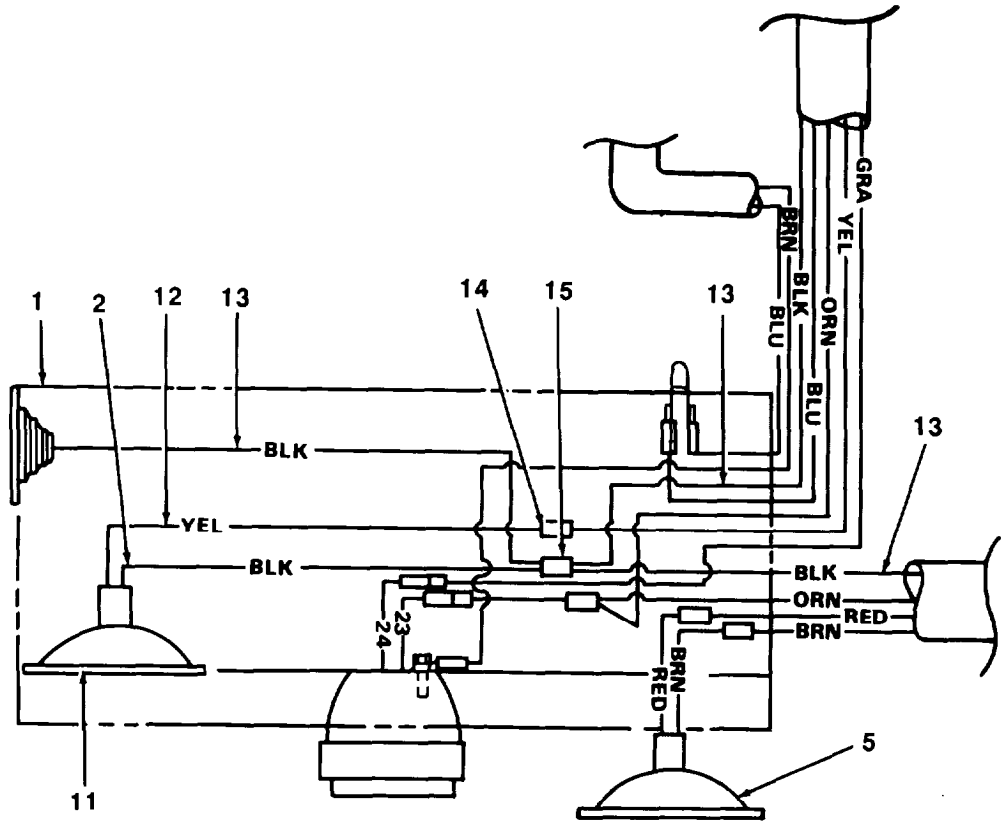
(1) Remove four screws (4) and pull stop/taillight (5) away from light box (1) enough to gain access to wiring inside light box.

4-21. TURN SIGNAL/TAILLIGHT MAINTENANCE (Con"t).

NOTE

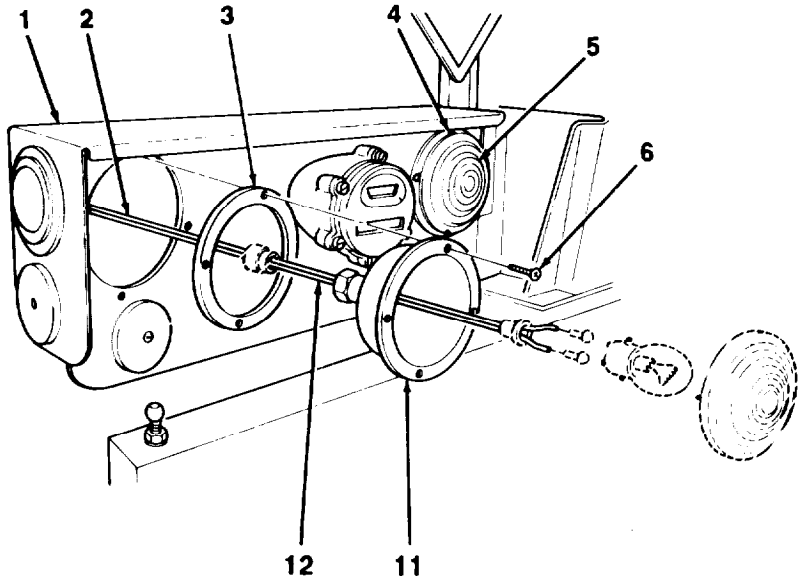
Curbside turn signal/taillight (11) has a green wire instead of a yellow wire (12).

(2) Reach inside light box (1) and cut connector (14) from yellow wire (12). Cut connector (15) from four black wires (2 and 13). Discard connectors.



(3) Remove four screws (6) and remove turn signal/taillight (11) from light box (1). If damaged, remove gasket (3) and discard.

4-21. TURN SIGNAL/TAILLIGHT MAINTENANCE (Con"t).



c. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Ensure that all wire connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.

(1) If removed, install new gasket (3). Install turn signal/taillight (11) to light box (1) with four screws (6).

NOTE

Curbside turn signal/taillight (11) has a green wire instead of a yellow wire (12).

(2) Connect yellow wire (12) with new connector (14). Connect four black wires (2 and 13) with new connector (15). Crimp connectors.

(3) Install stop/taillight (5) with four screws (4).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-22. CONVOY WARNING LIGHT WIRING MAINTENANCE.

THIS TASK COVERS

a. Removal of Toggle Switch
b. Installation of Toggle Switch
c. Removal of Condulet and Receptacle
d. Installation of Condulet and Receptacle

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Hand drill
- Rivet gun
- Wire terminal kit

Materials/Parts:

- One gasket
- Two connectors
- Two locknuts
- Corrosion preventive compound (Item 7, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. REMOVAL OF TOGGLE SWITCH

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Tag wires for installation if lights are being removed from light box (1).

(1) Remove four screws and pull stop/taillight (4) away from light box (1) enough to gain access to wiring inside (see paragraph 4-20).

NOTE

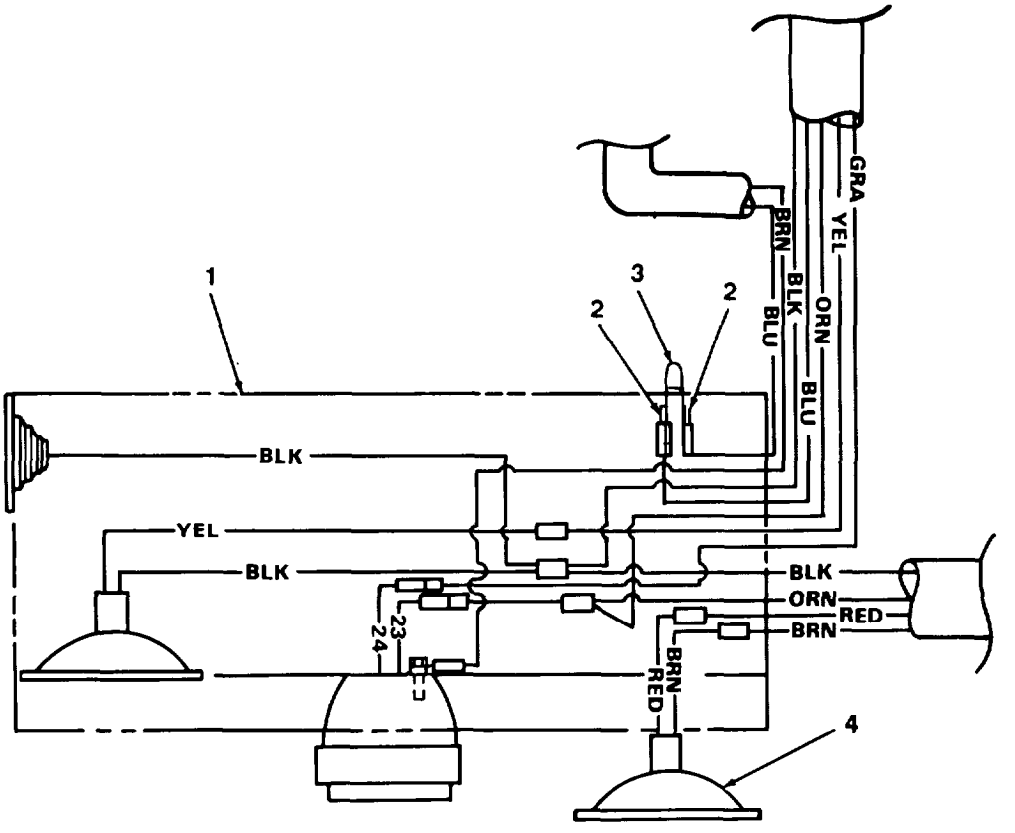
Toggle switch (3) terminals should be marked to ensure proper installation of terminals (2).

(2) On outside of light box (1), remove rubber boot from toggle switch (3).

(3) Remove nut and toggle switch (3).

(4) Remove two screws and disconnect two terminals (2) from toggle switch (3) inside light box (1).

4-22. CONVOY WARNING LIGHT WIRING MAINTENANCE (Con't).



b. INSTALLATION OF TOGGLE SWITCH

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Ensure that all connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.

(1) Connect two terminals (2) to toggle switch (3) inside light box (1), as marked, with two screws.

(2) Install toggle switch (3) to light box (1) with nut. Install rubber boot over toggle switch.

(3) Install stop/taillight (4) to light box (1) with four screws (see paragraph 4-20).

4-22. CONVOY WARNING LIGHT WIRING MAINTENANCE (Con"t).

c. REMOVAL OF CONDULET AND RECEPTACLE

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

To remove receptacle (14), perform steps 1-4.

(1) Remove cap (7) from receptacle (14). If cap is damaged, use side cutters to remove rivet (8) securing retaining chain (9) to rear dam (6).

(2) Loosen two captive screws (10) and remove cover (11). Remove gasket from cover and discard.

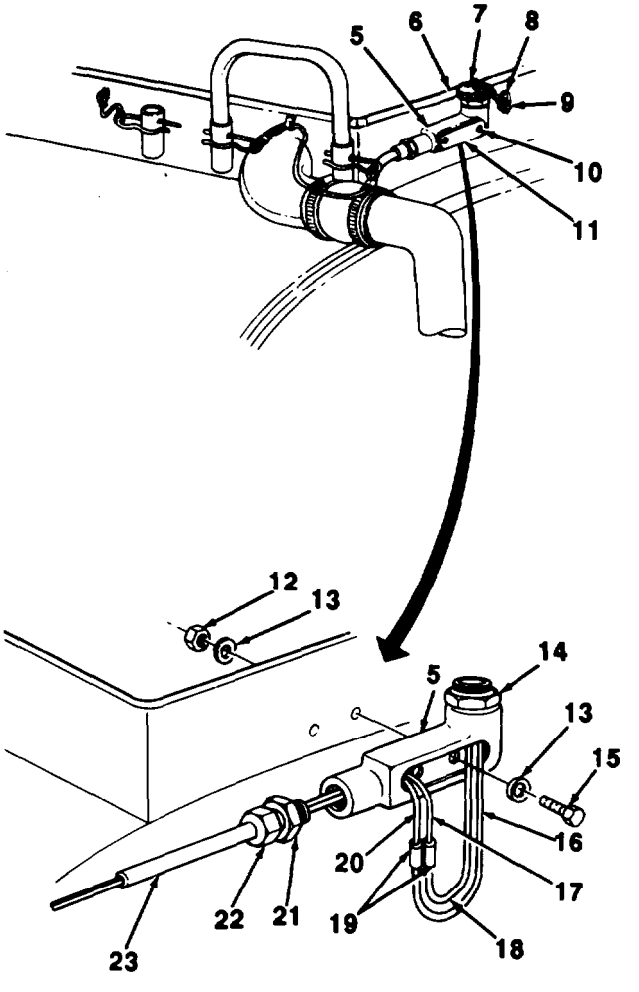
(3) Cut two connectors (19) and disconnect white and black receptacle wires (16 and 18) from brown and blue wires (20 and 17). Discard connectors.

(4) Remove receptacle (14) from condulet (5).

(5) Loosen nut (22) and disconnect conduit (23) from straight adapter (21). Pull brown and black wires (20 and 18) from condulet (5).

(6) Remove two locknuts (12), screws (15), four washers (13), and condulet (5) from rear dam (6). Discard locknuts.

(7) Remove straight adapter (21) from condulet (5).



4-22. CONVOY WARNING LIGHT WIRING MAINTENANCE (Con't).

d. INSTALLATION OF CONDULET AND RECEPTACLE

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- **Ensure that all connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.**
- **To install receptacle (14), perform steps 4 through 7.**

(1) Install straight adapter (21) to condulet (5).

(2) Install condulet (5) to rear dam (6) with two screws (15), four washers (13), and two new locknuts (12).

(3) Thread brown and blue wires (20 and 17) through straight adapter (21) into condulet (5). Connect conduit (23) to straight adapter and tighten nut (22).

(4) Install receptacle (14) to condulet (5).

(5) Connect brown wire (20) to white receptacle wire (16) with new connector (19). Connect blue wire (17) to black receptacle wire (18) with new connector. Crimp connectors.

(6) Install new gasket to cover (11). Install cover and tighten two captive screws (10).

(7) If removed, use a rivet gun to install retaining chain (9) to rear dam (6) with rivet (8). Install cap (7) on receptacle (14).

4-23. CONVOY WARNING LIGHT ASSEMBLY MAINTENANCE.

THIS TASK COVERS

a. Disassembly

b. Assembly

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-23	Convoy warning light removed from mounting bracket.

Tools:

- Tool kit, general mechanic's
- Torque wrench
- Wire terminal kit

Materials/Parts:

- Two terminals
- Three lockwashers
- Silicone Compound (Item 18.1, Appendix E)

a. DISASSEMBLY

(1) Loosen screw (3) from clamping ring (2). Remove clamping ring (2), dome (1), and gasket (7) from convoy warning light (13). Discard gasket.

(2) Unplug two terminals (4) of white and black cable wires (5 and 6) from convoy warning light (13). Tag and mark wires.

NOTE

Perform step 3 only if repairing wire.

(3) Cut terminals (4) from white and black cable wires (5 and 6) and discard.

(4) Remove three nuts (10), lockwashers (11), bolts (15), and washers (14). Separate convoy warning light (13) from base plate (12). Discard lockwashers.

(5) Pull away cable (9) from base of convoy warning light (13).

b. ASSEMBLY

CAUTION

Ensure that only component parts of the convoy warning light assembly, as listed in Appendix D, are used. The M1062 convoy warning light draws a maximum of 5 amperes. Use of another convoy warning light, which draws more than 5 amperes, may result in damage to electrical system.

(1) Thread cable (9) through hole in base of convoy warning light (13) so that encased portion of cable extends at least 3 in. (7.6 cm) from base. White and black cable wires (5 and 6) should be bared for 3 in. (7.6 cm) from encased portion of wire.

4-23. CONVOY WARNING LIGHT ASSEMBLY MAINTENANCE (Con't).

(2) Place a bead of silicone compound around cable (9) at base of convoy warning light (13).

(3) Position convoy warning light (13) over base plate (12). Secure convoy warning light (13) to base plate (12) with three bolts (15), washers (14), new lockwashers (11), and nuts (10). Torque nuts 10-20 lb.-in. (1-2 N•m).

NOTE

If repairing/replacing wire, crimp two new terminals onto ends of bared wires prior to performing step 4.

(4) Plug two terminals (4) onto convoy warning light (13). Connect black cable wire (6) to positive connection, and connect white cable wire (5) to negative connection.

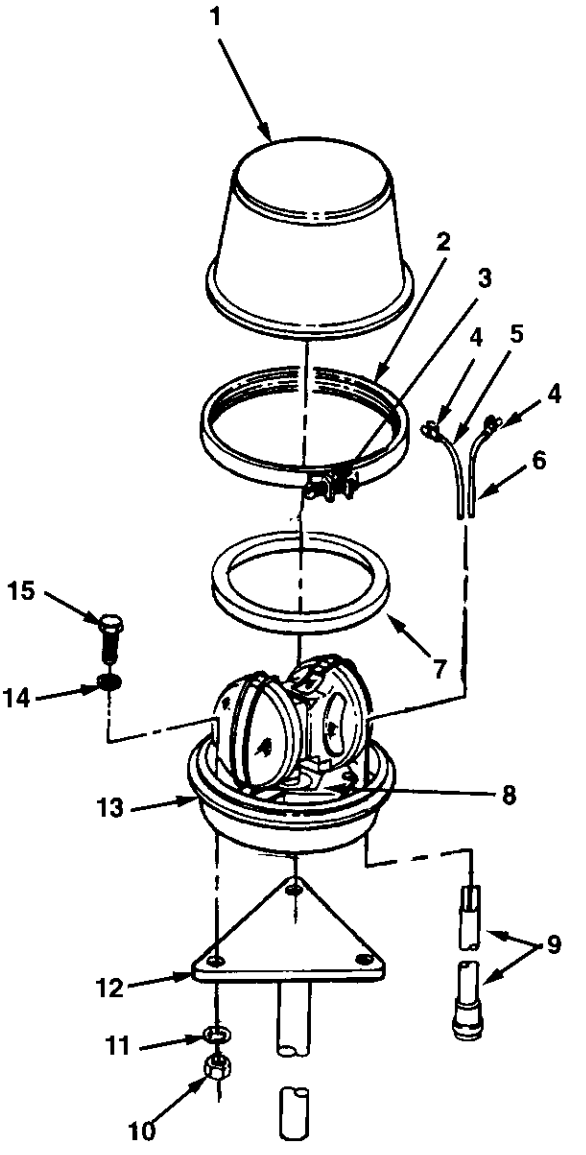
CAUTION

Before installing dome (1), ensure that white and black cable wires (5 and 6) are under rotating mechanism (8) of convoy warning light (13). Failure to follow this caution may result in damage to light or cable wires.

NOTE

Ensure that gasket (7) of convoy warning light (13) is in position before installing dome (1).

(5) Install new gasket (7) and dome (1) over convoy warning light (13). Install clamping ring (2) and screw (3), and tighten screw.



FOLLOW ON TASKS:

- Install convoy warning light to mounting bracket (see paragraph 2-23).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE.

THIS TASK COVERS

a. Button Contact Repair
b. Removal
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- One button contact
- Corrosion preventive compound (Item 7, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. BUTTON CONTACT REPAIR

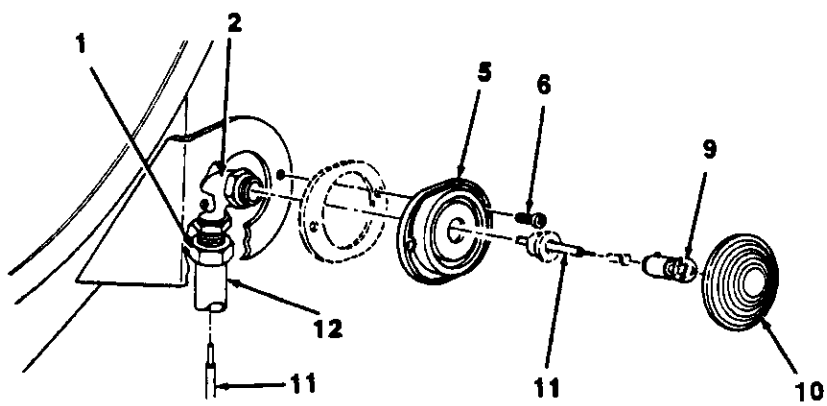
WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

CAUTION

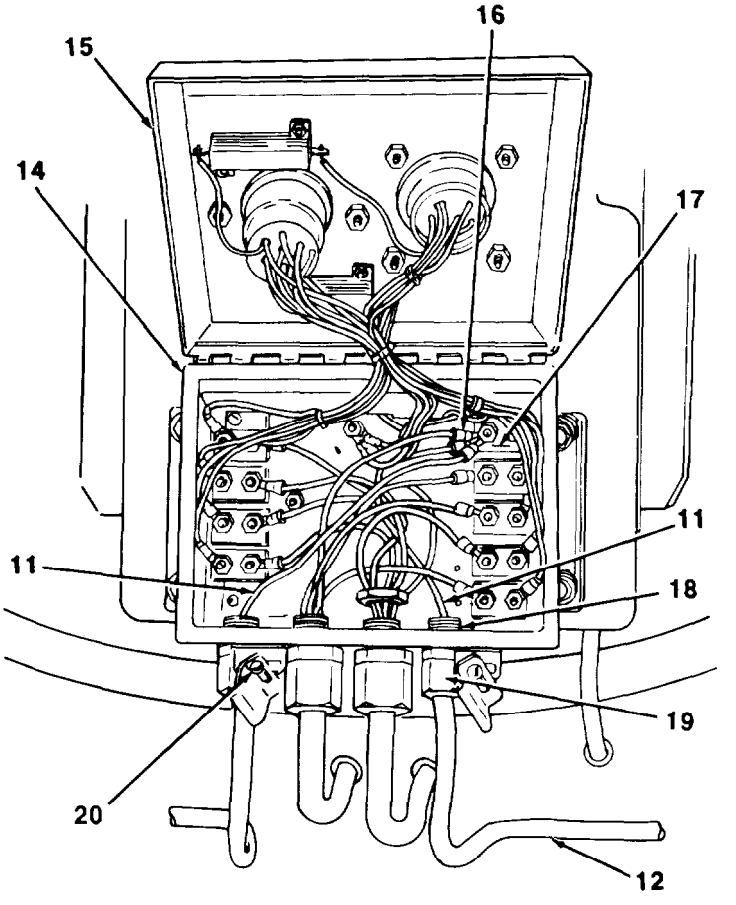
Use caution not to damage lens (10).

(1) Carefully use a screwdriver to lift up on lens (10) and remove. Remove lamp (9).



4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).

(2) Loosen two screws (20) and open voltage control unit cover (15). Prop cover open with cable from a dummy coupling. Remove two nuts and three terminals (16) from top roadside circuit breaker (17).



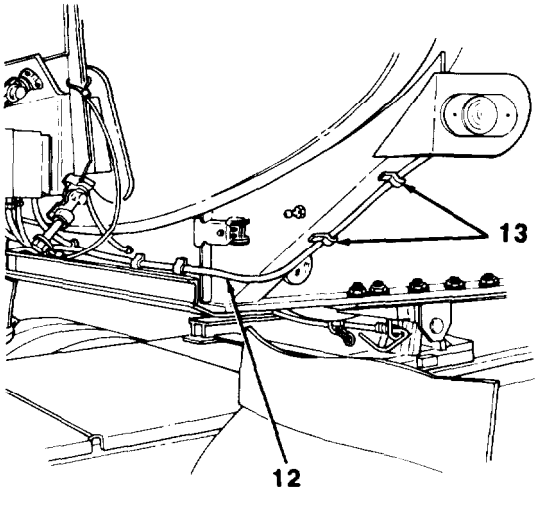
CAUTION

Use caution not to damage brown wire (11) and terminal (16).

(3) Loosen nut (19) at connector (18) and disconnect tubing (12) from voltage control unit (14). Remove brown wire (11) and tubing from voltage control unit.

CAUTION

Use caution when removing tubing (12) from clips (13). Clips should be lifted gently and only enough to release tubing. Improper handling of clips will cause them to break.



(4) Lift four clips (13) enough to free tubing (12) from semitrailer. Remove two screws (6) and remove front clearance and marker light (5), tubing, and brown wire (11) from semitrailer.

(5) Loosen nut (1) at elbow (2) and disconnect tubing (12). Straighten tubing and remove brown wire (11).

4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE (Con't).

(6) Loosen grommet (7). Pull brown wire (11) through front clearance and marker light (5).

(7) Cut brown wire (11) from button contact (8).

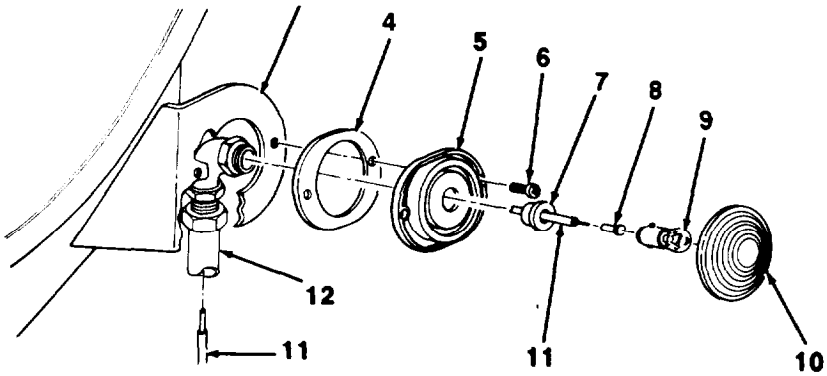
(8) Install new button contact (8) to end of brown wire (11). Crimp button contact.

(9) Install brown wire (11) through grommet (7) and front clearance and marker light (5). Seat grommet in neck of housing.

(10) Install lamp (9).

(11) Thread brown wire (11) through tubing (12).

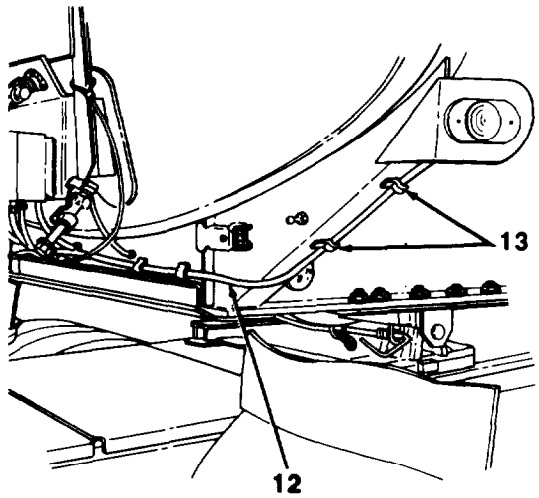
(12) Install tubing (12), brown wire (11), and front clearance and marker light (5) through hole in bracket (3). Install front clearance and marker light with two screws (6).



CAUTION

Use caution when installing tubing (12) under clips (13). When securing tubing under clips, a soft-faced hammer should be used to tap clips back into place. Improper handling of clips will cause them to break.

(13) Bend tubing (12) to fit under four clips (13). Bend clips to secure tubing.



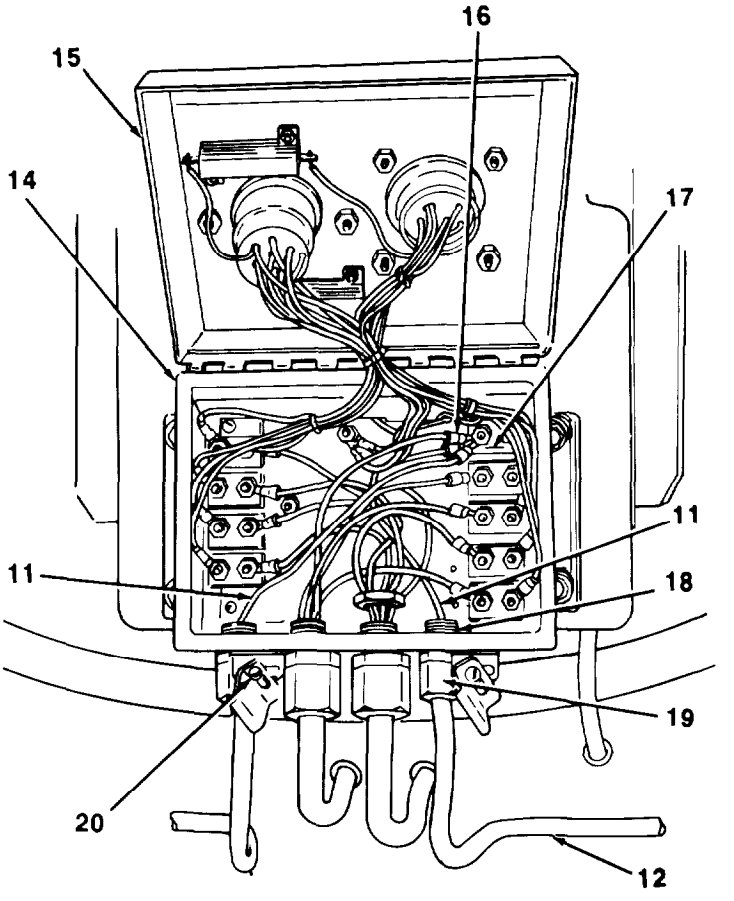
4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE (Con't).

(14) Thread brown wire (11) through connector (18) into voltage control unit (14). Connect tubing (12) at connector and tighten nut (19).

(15) Inside voltage control unit (14), connect three terminals (16) to top roadside circuit breaker (17) with two nuts.

(16) Close voltage control unit cover (15) and tighten two screws (20).

(17) Apply a thin coat of corrosion preventive compound to sealing lip of lens (10). Install lens.



b. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) Loosen two screws (20) and open voltage control unit cover (15). Prop cover open with cable from a dummy coupling. Remove two nuts and three terminals (16) from top roadside circuit breaker (17).

CAUTION

Use caution not to damage brown wire (11) and terminal (16).

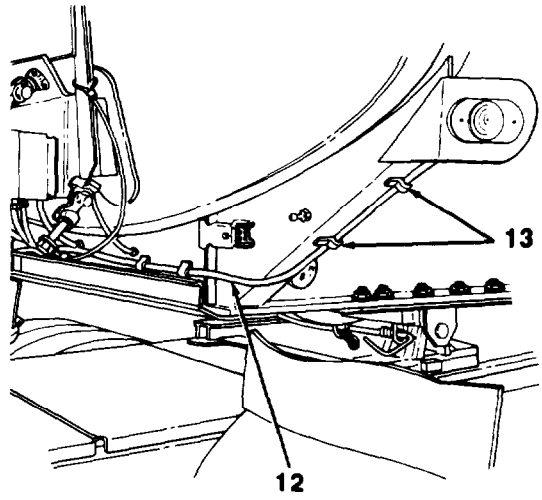
(2) Loosen nut (19) at connector (18) and disconnect tubing (12) from voltage control unit (14). Remove brown wire (11) and tubing from voltage control unit.

4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).

CAUTION

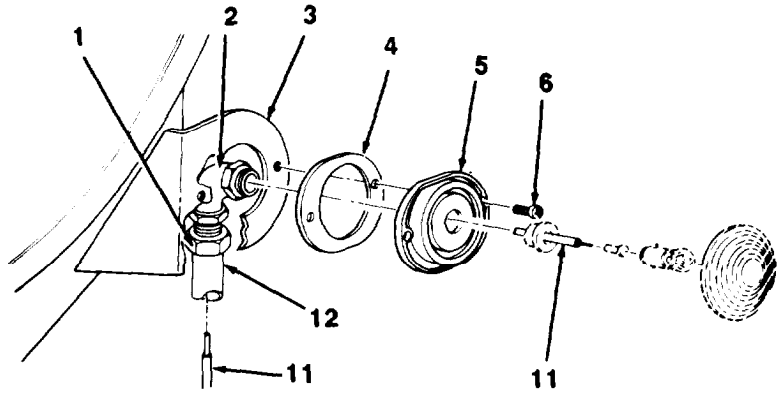
Use caution when removing tubing (12) from clips (13). Clips should be lifted gently and only enough to release tubing. Improper handling of clips will cause them to break.

(3) Lift four clips (13) enough to free tubing (12) from semitrailer. Remove two screws (6) and remove front clearance and marker light (5), tubing, and brown wire (11) from semitrailer.



(4) Loosen nut (1) at elbow (2) and disconnect tubing (12). Straighten tubing and remove brown wife (11).

(5) If damaged, remove gasket (4) and discard. Remove elbow (2) from front clearance and marker light (5).



4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE (Con't).

c. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- **Ensure that all connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.**
- **If two or more consecutive clips (13) are missing or damaged, tank must be purged and tested with combustible gas indicator set (see paragraph 4-68). Replacement clips can then be welded to semitrailer (see TM 9-237).**

(1) Install elbow (2) to front clearance and marker light (5). If removed, install new gasket (4).

(2) Thread brown wire (11) through tubing (12).

(3) Install tubing (12), brown wire (11), and front clearance and marker light (5) through hole in bracket (3). Install front clearance and marker light with two screws (6).

CAUTION

Use caution when installing tubing (12) under clips (13). When securing tubing under clips, a soft-faced hammer should be used to tap clips back into place. Improper handling of clips will cause them to break.

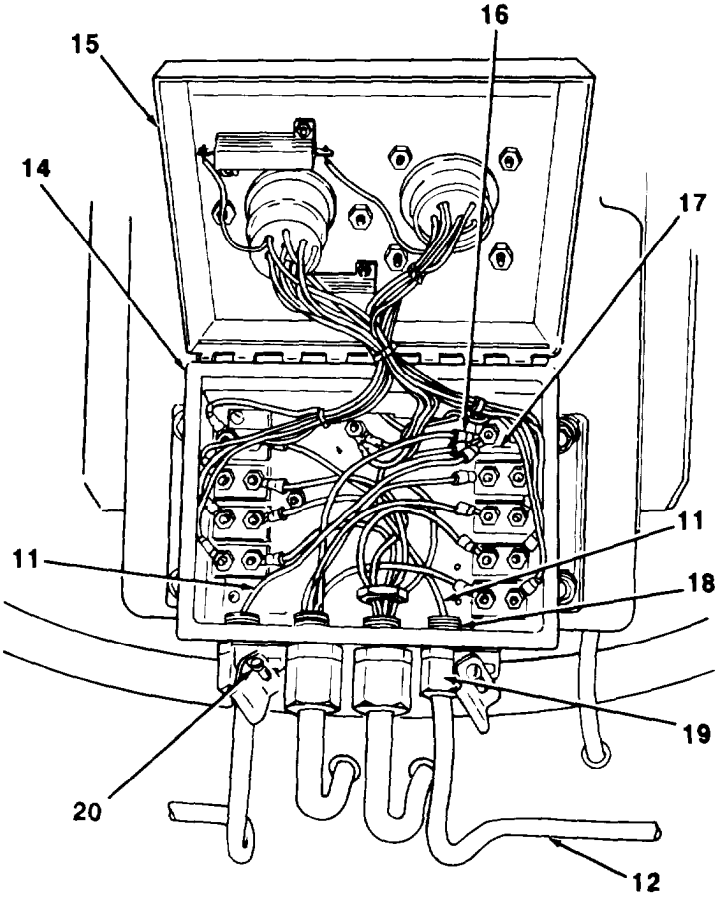
(4) Bend tubing (12) to fit under four clips (13). Bend clips to secure tubing.

4-24. FRONT CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).

(5) Thread brown wire (11) through connector (18) into voltage control unit (14). Connect tubing (12) at connector and tighten nut (19).

(6) Inside voltage control unit (14), connect three terminals (16) to top roadside circuit breaker (17) with two nuts.

(7) Close voltage control unit cover (15) and tighten two screws (20).



FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-25. SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE.

THIS TASK COVERS

a. Button Contact Repair
b. Removal
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
2-14 Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- One button contact
- One connector
- One gasket
- Corrosion preventive compound (Item 7, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. BUTTON CONTACT REPAIR

WARNING

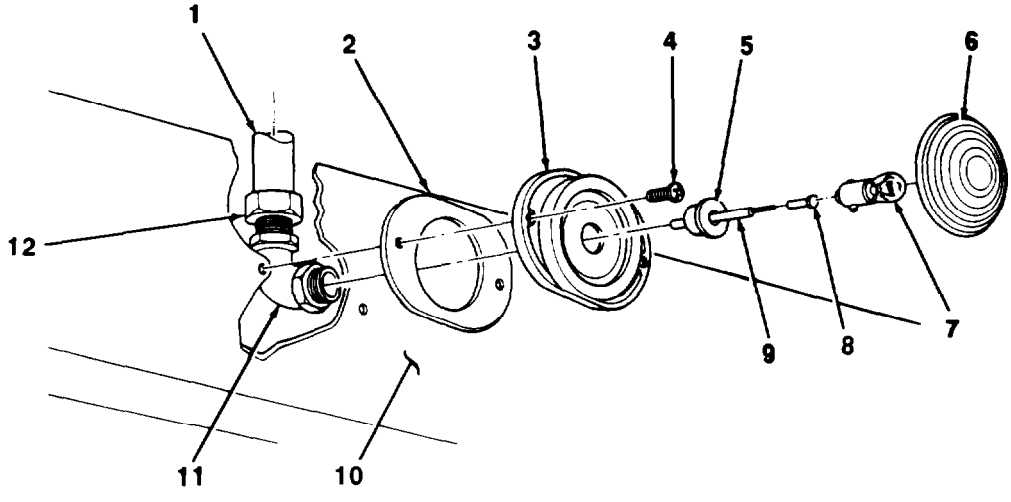
When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting In serious injury or death to personnel.

4-25. SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).

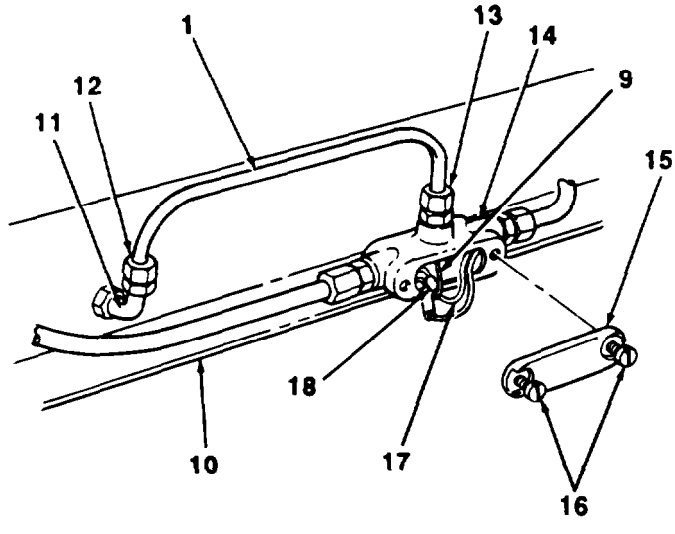
CAUTION

Use caution not to damage lens (6).

(1) Carefully use a screwdriver to lift lens (6) and remove. Remove lamp (7).



(2) Loosen two screws (16) and remove cover (15) from condulet (14) at inner surface of framerail (10). Remove gasket from cover and discard.



NOTE

On roadside, black wire (9) from side clearance and marker light (3) connects to two black wires (17). On curbside, black wire connects to two brown wires.

(3) Cut connector (18) at black wire (9) and two black wires (17). Discard connector.

(4) Loosen nuts (12 and 13) and disconnect conduit (1) from elbow (11) and condulet (14).

(5) Straighten conduit (1). pull from black wire (9), and remove.

4-25. SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).

(6) Remove two screws (4), side clearance and marker light (3), and elbow (11) from framerail (10).

(7) Loosen grommet (5) and pull black wire (9) through.

(8) Cut black wire (9) from button contact (8). Discard button contact.

(9) Install new button contact (8) to end of black wire (9) and crimp.

(10) Thread black wire (9) through elbow (11) and side clearance and marker light (3). Install grommet (5) through black wire. Seat grommet in neck of housing.

(11) Install lamp (7).

(12) Install elbow (11) and side clearance and marker light (3) through hole in framerail (10) with two screws (4).

(13) Thread black wire (9) through conduit (1). Connect conduit to elbow (11) and tighten nut (12).

(14) Thread black wire (9) into condulet (14). Connect conduit (1) to condulet and tighten nut (13).

(15) Connect black wire (9) to two black wires (17) with new connector (18). Crimp connector.

(16) Install new gasket to cover (15). Install cover on condulet (14) and tighten two screws (16).

(17) Apply a thin coat of corrosion preventive compound to sealing lip of lens (6). Install lens.

b. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) Loosen two screws (16) and remove cover (15) from condulet (14). Remove gasket from cover and discard.

NOTE

On roadside, black wire (9) from side clearance and marker light (3) connects to two black wires (17). On curbside, black wire connects to two brown wires.

(2) Cut connector (18) at black wire (9) and two black wires (17). Discard connector.

(3) Loosen nuts (12 and 13) and disconnect conduit (1) from elbow (11) and condulet (14).

(4) Straighten conduit (1), pull from black wire (9), and remove.

(5) Remove two screws (4), side clearance and marker light (3), and elbow (11) from framerail (10).

(6) Remove elbow (11) from side clearance and marker light (3). If damaged, remove gasket (2) and discard.

4-25. SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con't).

c. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

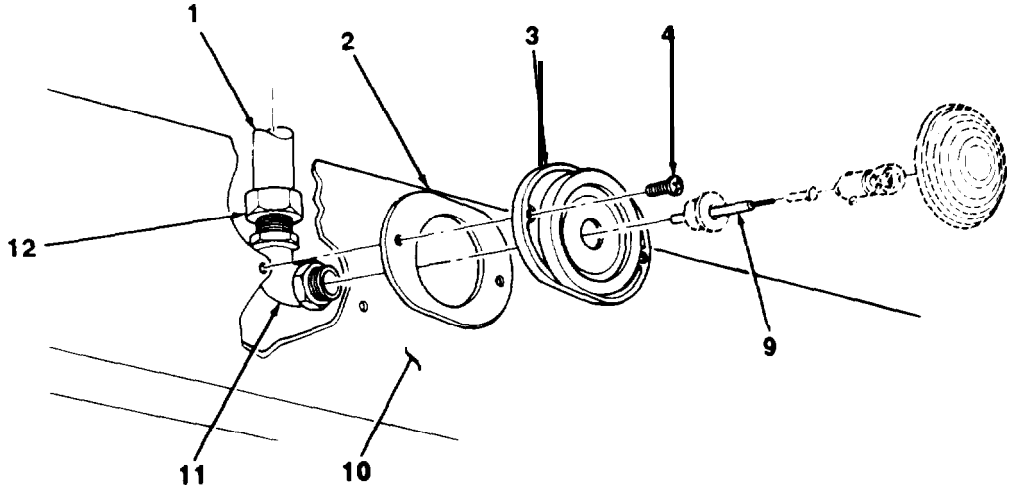
NOTE

Ensure that all connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.

(1) Install elbow (11) on side clearance and marker light (3). If removed, install new gasket (2).

(2) Install elbow (11) and side clearance and marker light (3) assembly through hole in framerail (10) with two screws (4).

(3) Thread black wire (9) through conduit (1). Connect conduit to elbow (11) and tighten nut (12).

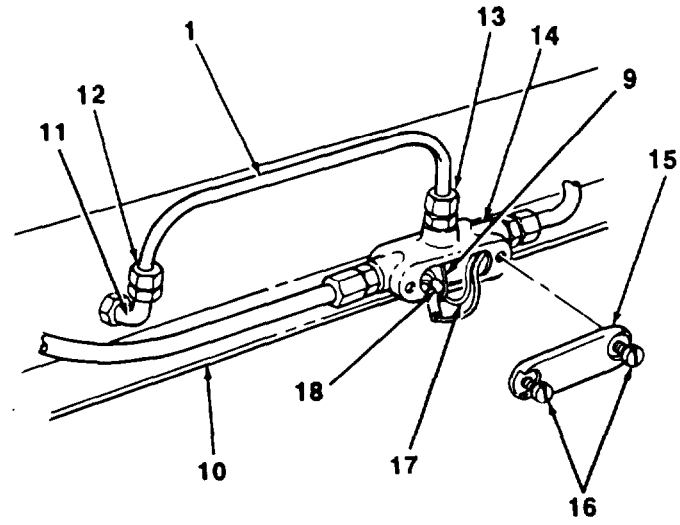


4-25. SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con't)

(4) Thread black wire (9) into condulet (14). Connect conduit (1) to condulet and tighten nut (13).

(5) Connect black wire (9) to two black wires (17) with new connector (18). Crimp connector.

(6) Install new gasket to cover (15). Install cover on condulet (14) and tighten two screws (16).



FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-26. REAR SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE.

THIS TASK COVERS

a. Button Contact Repair
b. Removal
C. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- One button contact
- One connector
- Corrosion preventive compound (Item 7, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer.

a. BUTTON CONTACT REPAIR

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

CAUTION

Use caution not to damage lens (9).

(1) Carefully use a screwdriver to lift lens (9) and remove. Remove lamp (8).

(2) Remove four screws (1) and pull stop/taillight (2) away from light box (3) enough to gain access to wiring inside light box.

(3) Remove four screws (6) and rear side clearance and marker light (5) from light box (3).

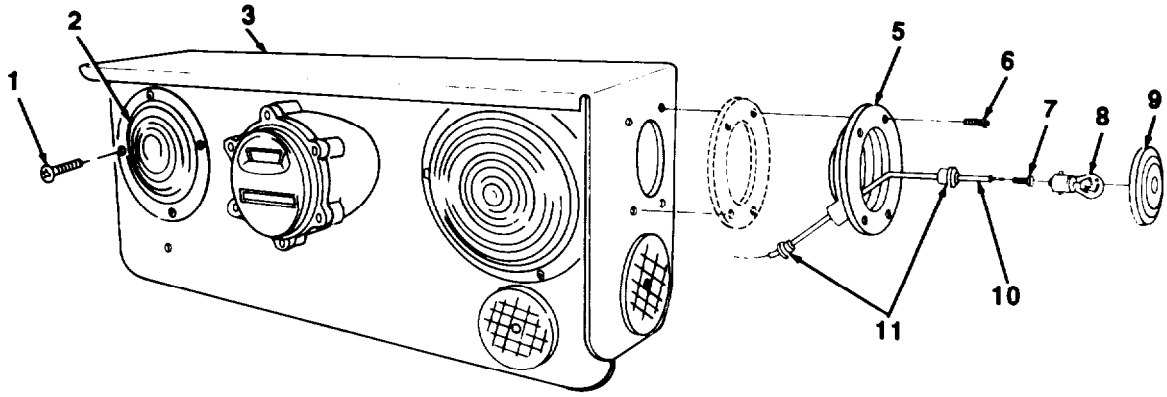
(4) Loosen two grommets (11) from rear side clearance and marker light (5), and pull black wire (10) through.

(5) Cut black wire (10) from button contact (7). Discard button contact.

(6) Install new button contact (7) to end of black wire (10). Crimp button contact.

(7) Install two grommets (11) through black wire (10), Thread black wire through rear side clearance and marker light (5), and seat grommets in neck of housing.

4-26. REAR SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).



(8) Install lamp (8).

(9) Install rear side clearance and marker light (5) to light box (3) with four screws (6).

(10) Install stop/taillight (2) with four screws (1).

(11) Apply a thin coat of corrosion preventive compound to sealing lip of lens (9). Install lens.

b. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious Injury or death to personnel.

NOTE

Tag wires for installation if other lights at light box (3) are being removed.

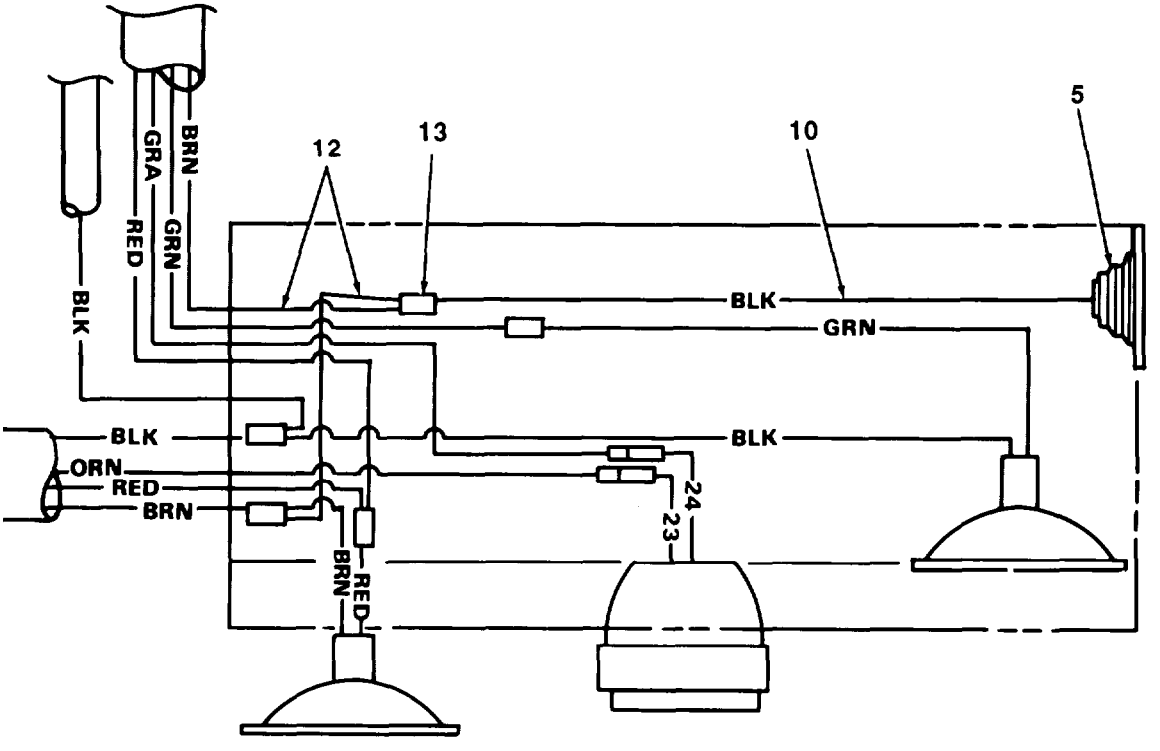
(1) Remove four screws (1) and pull stop/taillight (2) away from light box (3) enough to gain access to wiring inside light box.

4-26. REAR SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).

NOTE

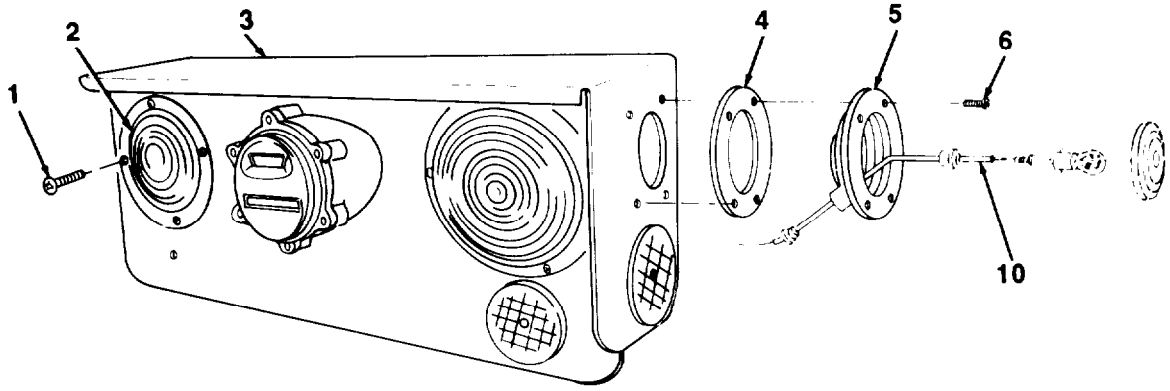
On curbside, black wire (10) from rear side clearance and marker light (5) connects to two brown wires (12). On roadside, black wire connects to three black wires. Curbside wiring is shown.

(2) Cut connector (13) from two brown wires (12). Discard connector.



(3) Remove four screws (6) and rear side clearance and marker light (5) from light box (3). **If** damaged, remove gasket (4) and discard.

4-26. REAR SIDE CLEARANCE AND MARKER LIGHT MAINTENANCE (Con"t).



c. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

Ensure that all connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.

(1) If removed, install new gasket (4). Install rear side clearance and marker light (5) to light box (3) with four screws (6).

NOTE

On curbside, black wire (10) from rear side clearance and marker light (5) connects to two brown wires (12). On roadside, black wire connects to three black wires. Curbside wiring is shown.

(2) Connect black wire (10) to two brown wires (12) with new connector (13). Crimp connector.

(3) Install stop/taillight (2) with four screws (1).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-27. REFLECTOR REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Materials/Parts:

- One rivet

Tools:

- Tool kit, general mechanic's
- Hand riveter

General Safety Instructions:

- DO NOT drill out rivet when replacing a damaged reflector.

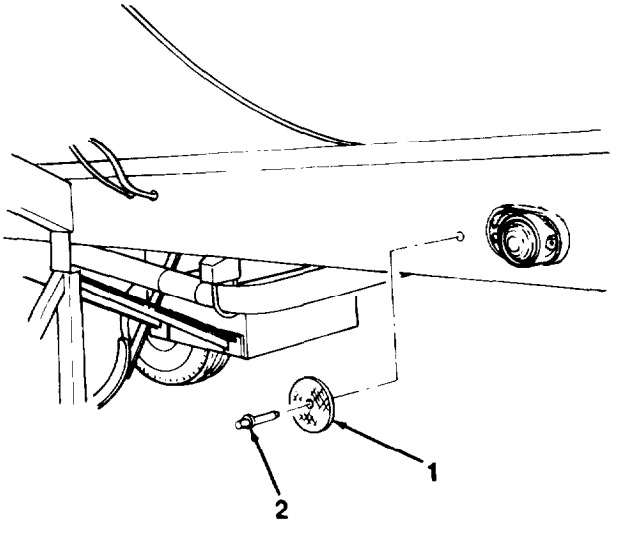
a. REMOVAL

WARNING

DO NOT drill out rivet (2) when replacing a damaged reflector. Drilling can produce a spark which may cause an explosion and fire. Failure to follow this warning may result in serious injury or death to personnel.

(1) Remove damaged reflector (1) pieces away from rivet (2).

(2) Pull on rivet (2) with pliers to remove. Discard rivet and reflector (1).



b. INSTALLATION

Install reflector (1) with new rivet (2).

4-28. TRIPLE CLEARANCE LIGHT ASSEMBLY REPLACEMENT.

THIS TASK COVERS

a. Removal

b. installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions

2-14 Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- One connector
- Corrosion preventive compound (Item 7, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

4-28. TRIPLE CLEARANCE LIGHT ASSEMBLY REPLACEMENT (Con't).

CAUTION

Use caution not to damage lens (9).

(1) Carefully use a screwdriver to lift lens (9) and remove.

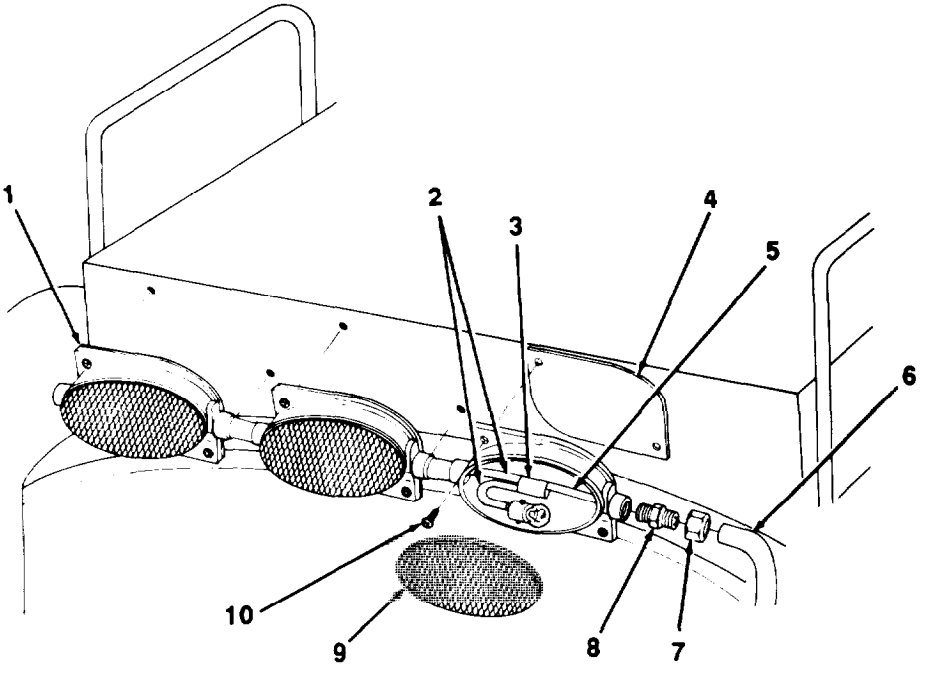
(2) Cut connector (3) from black wire (5) and two brown wires (2). Discard connector.

(3) Remove two screws (10) closest to conduit (6). Lift triple clearance light assembly (1) away from semitrailer enough to allow tool to be placed on nut (7).

(4) Loosen nut (7) at straight adapter (8) and disconnect conduit (6) from triple clearance light assembly (1). Remove black wire (5) from triple clearance light assembly.

(5) Remove four remaining screws (10) and triple clearance light assembly (1) from semitrailer. If damaged, remove three gaskets (4) and discard.

(6) Remove straight adapter (8) from triple clearance light assembly (1).



b. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) Install straight adapter (8) to triple clearance light assembly (1).

4-28. TRIPLE CLEARANCE LIGHT ASSEMBLY REPLACEMENT (Con't).

(2) If removed, install three new gaskets (4) and triple clearance light assembly (1) to semitrailer with six screws (10). Leave two screws closest to conduit (6) loose.

(3) Thread black wire (5) through straight adapter (8) into triple clearance light assembly (1). Connect black wire to two brown wires (2) and crimp new connector (3).

(4) Connect conduit (6) to triple clearance light assembly (1) at straight adapter (8) and tighten nut (7). Tighten two loose screws (10) closest to conduit.

(5) Apply a thin coat of corrosion preventive compound to sealing lip of lens (9). Install lens to triple clearance light assembly (1).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of light (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-29. ELECTRICAL CONDUIT AND WIRES REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-14	Intervehicular electrical cable disconnected from semitrailer.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit
- Tubing cutter

Materials/Parts:

- Connectors (as required)
- Terminals (as required)
- Corrosion preventive compound (Item 7, Appendix E)
- Grease (Item 12, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- When performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer.

a. REMOVAL

WARNING

When performing electrical maintenance, ALWAYS disconnect Intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious Injury or death to personnel.

NOTE

- **Refer to paragraph 4-30 for information on routing of electrical wires and location of electrical components.**
- **Removal of front clearance and marker light conduit is covered in paragraph 4-24. Removal of short length of conduit at side clearance and marker light** is **covered in paragraph 4-25.**
- **Tag wires for installation.**

(1) At each end of electrical conduit (1), cut wires (4) from connectors (5) :

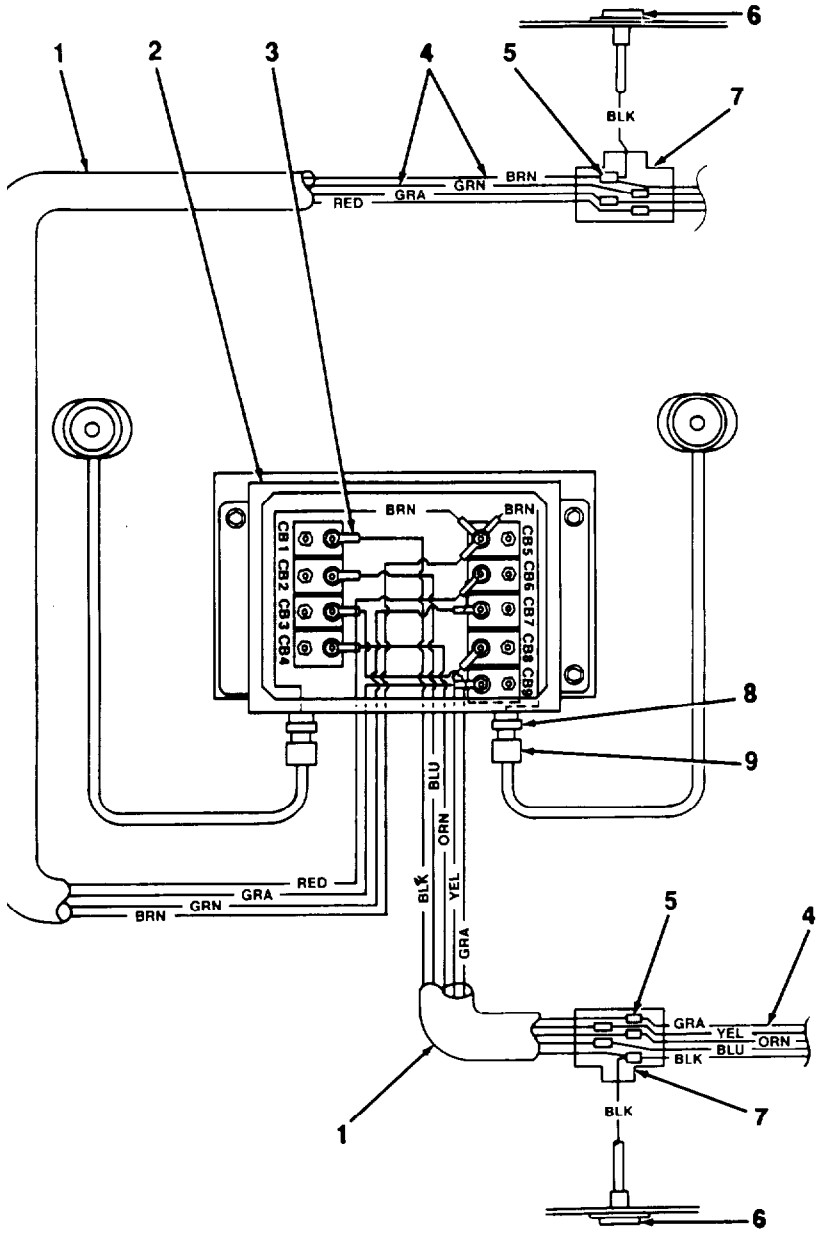
(a) If removing electrical conduit at front of semitrailer, disconnect wires from circuit breaker posts inside voltage control unit (2), then cut terminals (3) from wires.

(b) To gain access to connectors at condulet (7) at side clearance and marker light, cover of condulet must be removed (see paragraph 4-25).

(c) To gain access to connectors inside rear light box, stop/taillight must be removed (see paragraph 4-20).

(d) To gain access to connectors at convoy warning light condulet, cover of condulet must be removed (see paragraph 4-22).

4-29. ELECTRICAL CONDUIT AND WIRES REPLACEMENT (Con't).



(2) If removing electrical conduit (1) at voltage control unit (2), at condulet (7) at side clearance and marker light (6), at triple clearance light assembly, or at convoy warning light condulet, loosen nut (9) and disconnect electrical conduit from connector (8).

CAUTION

Use caution when releasing electrical conduit (1) from under clips. Clips should be lifted gently and only enough to release electrical conduit. Improper handling of clips will cause them to break.

(3) Gently lift clips to release electrical conduit (1). Remove electrical conduit.

(4) Inspect all grommets along electrical conduit routing. If grommets are damaged, replace.

4-29. ELECTRICAL CONDUIT AND WIRES REPLACEMENT (Con't).

b. INSTALLATION

WARNING

When performing electrical maintenance, ALWAYS disconnect inter-vehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

NOTE

- **Refer to paragraph 4-30 for information on routing of electrical wires and location of electrical components.**
- **Installation of front clearance and marker light conduit is covered in paragraph 4-24. Installation of short length of conduit at side clearance and marker light is covered in paragraph 4-25.**
- **Refer to Appendix G for information on manufacturing electrical conduit (1) and wires (4).**
- **Ensure that all connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosive preventive compound before they are made.**

(1) Cut electrical conduit (1) and wires (4) to length.

(2) Feed all wires (4) through electrical conduit (1).

(3) Apply grease to all grommets along electrical conduit routing.

(4) Install one end of electrical conduit (1):

(a) If installing electrical conduit at voltage control unit (2). at condulet (7) at side clearance and marker light (6), at triple clearance light assembly, or at convoy warning light condulet, feed wires (4) through connector (8) and connect electrical conduit. Tighten nut (9).

NOTE

To aid in installation at rear light box, bend electrical conduit before feeding conduit through grommet into light box.

(b) If installing electrical conduit at rear of semitrailer, feed wires and electrical conduit through grommet into light box.

CAUTION

Use caution when securing electrical conduit (1) under clips. Improper handling of clips will cause them to break.

NOTE

If two or more consecutive clips are missing or damaged, notify direct support maintenance.

(5) Bend electrical conduit (l), as required, and secure under clips by tapping clips with a soft-faced hammer.

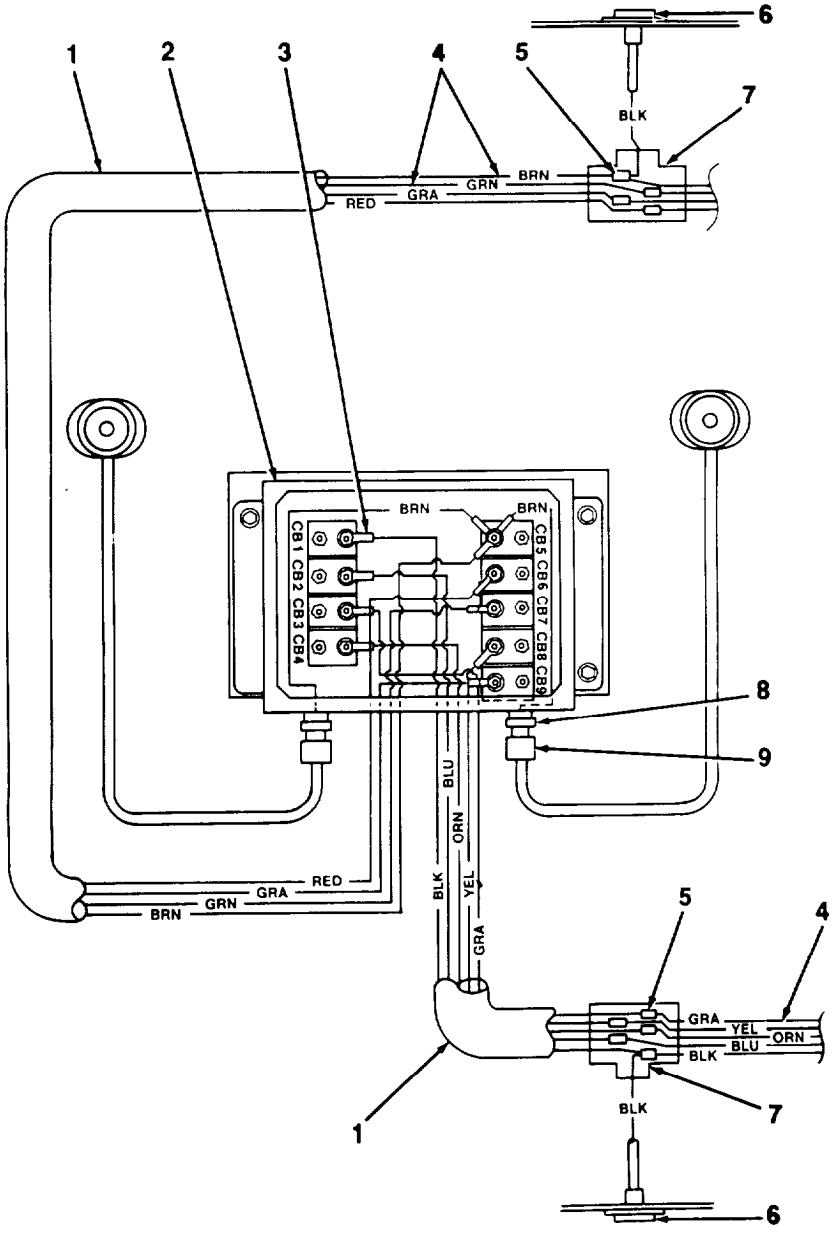
4-29. ELECTRICAL CONDUIT AND WIRES REPLACEMENT (Con't).

(6) Cut any excess length of electrical conduit (1). Install electrical conduit at other end.

(7) Connect wires (4) at each end of electrical conduit (1). as tagged, with new connectors (5):

(a) If electrical conduit at front of semitrailer was replaced, install new terminals (3) on wires and connect to circuit breaker posts in voltage control unit (2).

(b) If cover of condulet (7) at side clearance and marker light (6) was removed to gain access to connectors inside condulet, install cover (see paragraph 4-25).



4-29. ELECTRICAL CONDUIT AND WIRES REPLACEMENT (Con't).

(c) If stop/taillight was removed to gain access to connectors inside rear light box, install stop/taillight (see paragraph 4-20).

(d) If cover of convoy warning light condulet was removed to gain access to connectors inside, install cover of condulet (see paragraph 4-22).

FOLLOW-ON TASKS:

- Connect intervehicular electrical cable to semitrailer (see paragraph 2-12).
- Check operation of lights (see TM 9-2320-273-10 or TM 9-2320-283-10)

4-30. WIRING DIAGRAMS.

THIS TASK COVERS

a. General Instructions
b. Voltage Control Unit and 12-Volt and 24-Volt Electrical Connector Wiring
c. Voltage Control Unit and **Front** Chassis Wiring
d. Rear Chassis Wiring

a. GENERAL INSTRUCTIONS

WARNING

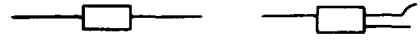
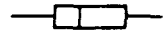
When troubleshooting an electrical malfunction or performing electrical maintenance, ALWAYS disconnect intervehicular electrical cable from semitrailer. Failure to follow this warning may create a spark and explosion, resulting in serious injury or death to personnel.

(1) This paragraph contains wiring diagrams for the M1062 7500 Gallon Fuel Tank Semitrailer. Refer to these wiring diagrams when performing electrical troubleshooting and when performing electrical repair and maintenance.

(2) All wires, except blackout lights, are color-coded. The following abbreviations of wire colors are used in the wiring diagrams:

BLK	Black
BLU	Blue
BRN	Brown
GRA	Gray
GRN	Green
ORN	Orange
RED	Red
WHT	White
YEL	Yellow

(3) Symbols. The following is a list of electrical components and the symbols used to identify them in the wiring diagrams:

Item	Symbol	Function
Connector		Crimp connection between two or more wires.
Connector		Plug-in male/female connector.
Terminal		Connecting element from wire to component.

4-30. WIRING DIAGRAMS (Con't).

(4) Major components in wiring diagrams are labeled. The following is a list of component abbreviations:

BO	Blackout
CWL	Convoy Warning Light
CB	Circuit Breaker
G N D	Ground
12-v CONN	12-volt Electrical Connector
24-v CONN	24-volt Electrical Connector
RCPT	Receptacle
RES	Resistor
V C U	Voltage Control Unit
VRM	Voltage Reducer Module

(5) The 12-volt electrical connector pins are identified by numbers; the 24-volt electrical connector pins are identified by letters; the convoy warning light receptacle pins are identified by numbers.

(6) Numbers have been assigned to the circuit breakers for ease of identification when performing electrical troubleshooting. These numbers can be found in the wiring diagrams. The circuit breakers themselves have no numbers on them.

(7) Table 4-3 identifies each circuit breaker by number, the corresponding chassis wire color, and all lights/switches that operate off that circuit.

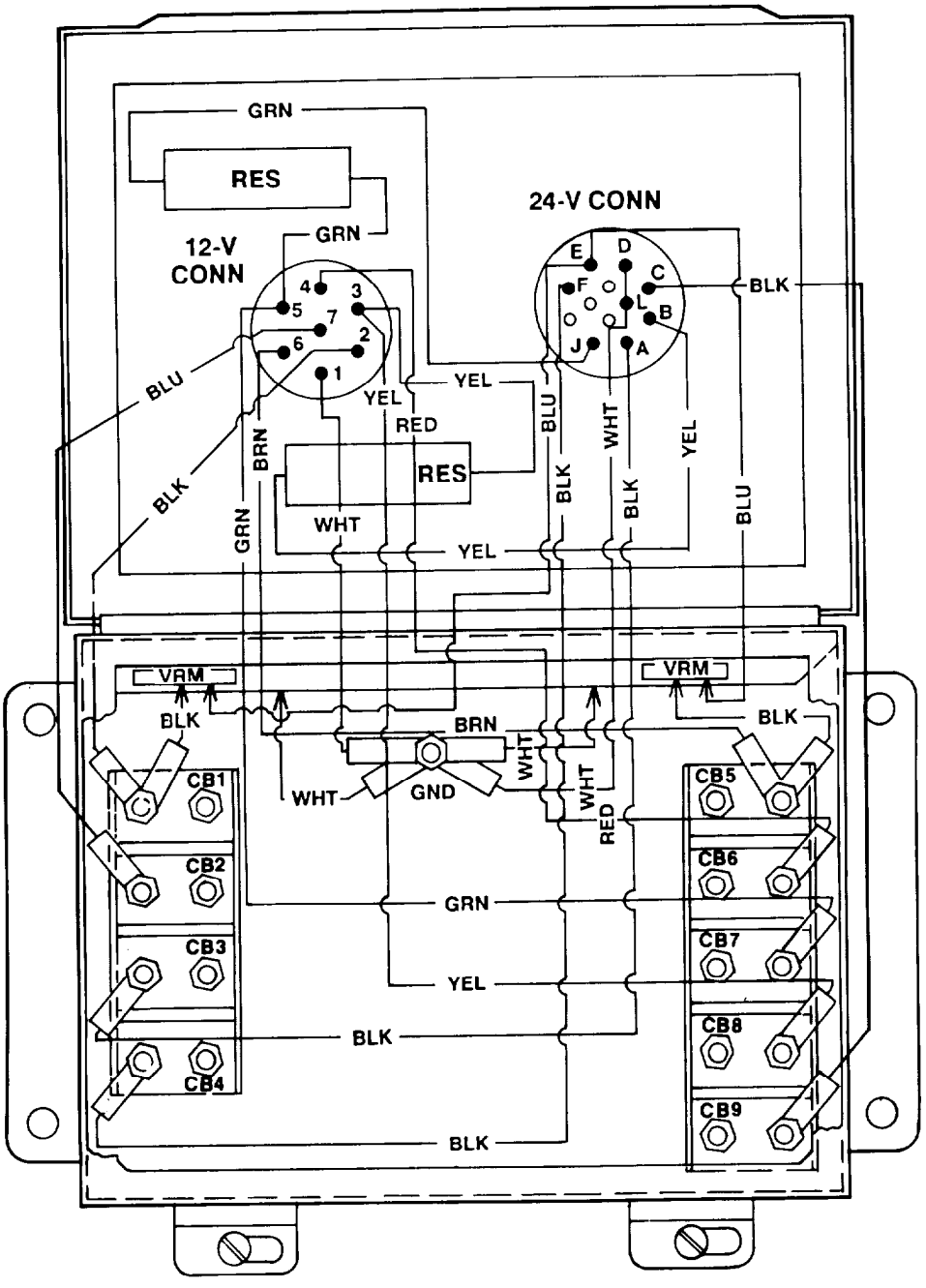
Table 4-3. M1062 Circuit Breaker Circuits.

Circuit Breaker Number	Chassis Wire Color	Lights On Circuit
1	Black	• Roadside Side Clearance and Marker Light • Roadside Rear Side Clearance and Marker Light • Triple Clearance Light Assembly • Curbside/Roadside Running Lights (at Turn Signal/Taillights)
2	Blue	Convoy Warning Light
3	Gray (Roadside)	Roadside Blackout Drive
4	Orange	Curbside/Roadside Blackout Stoplights
5	Brown	• Curbside/Roadside Front Clearance and Marker Lights • Curbside Side Clearance and Marker Light • Curbside Rear Side Clearance and Marker Light • Curbside/Roadside Running Lights (at Stop/Taillights)
6	Red	Curbside/Roadside Stoplights
7	Green	Curbside Turn Signal
8	Yellow	Roadside Turn Signal
9	Gray (Curbside)	Curbside Blackout Drive

4-30. WIRING DIAGRAMS (Con't).

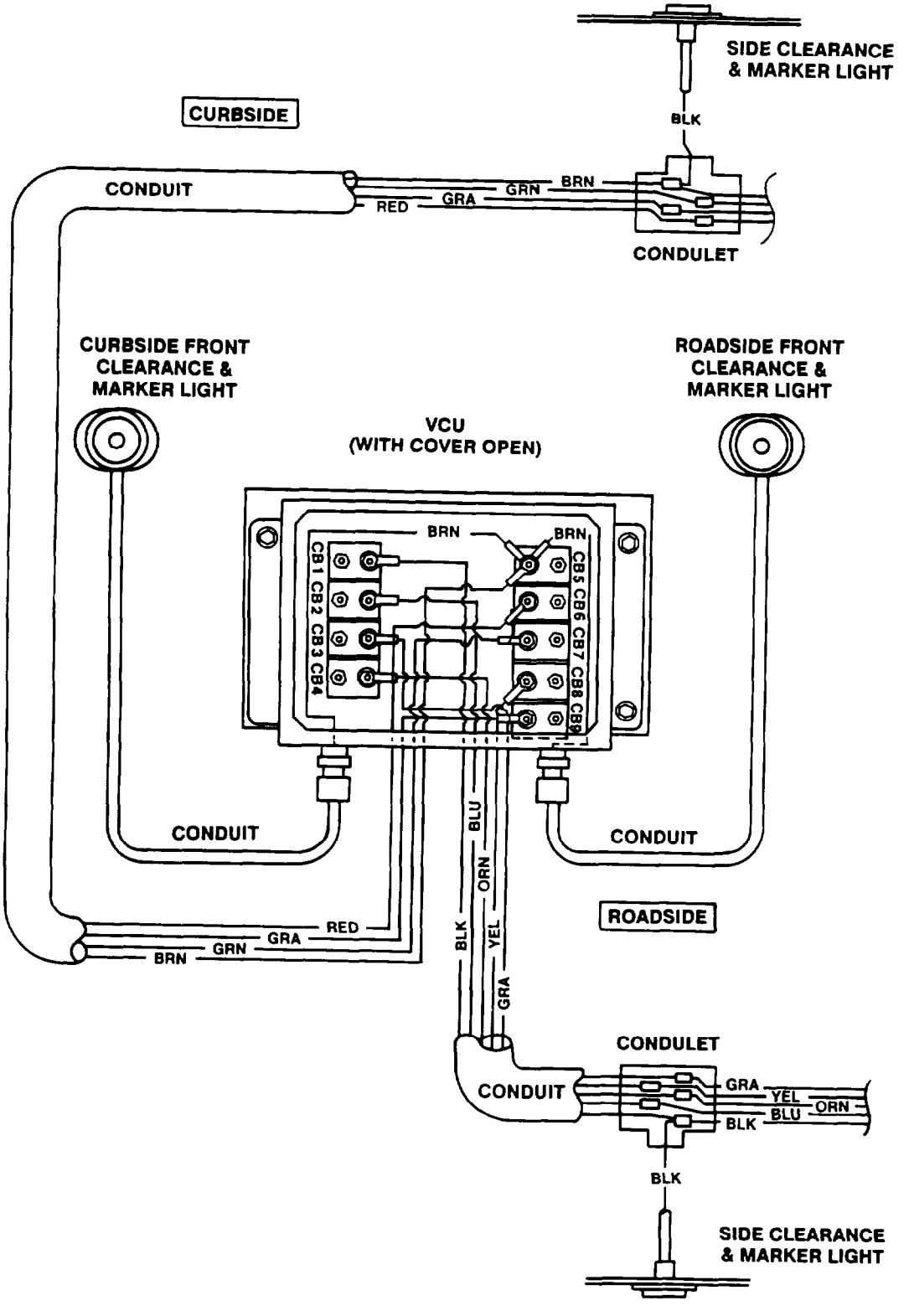
(8) For information on manufacturing wires, wire assemblies, and electrical conduit, refer to Appendix G.

b. VOLTAGE CONTROL UNIT AND 12-VOLT AND 24-VOLT ELECTRICAL CONNECTOR WIRING



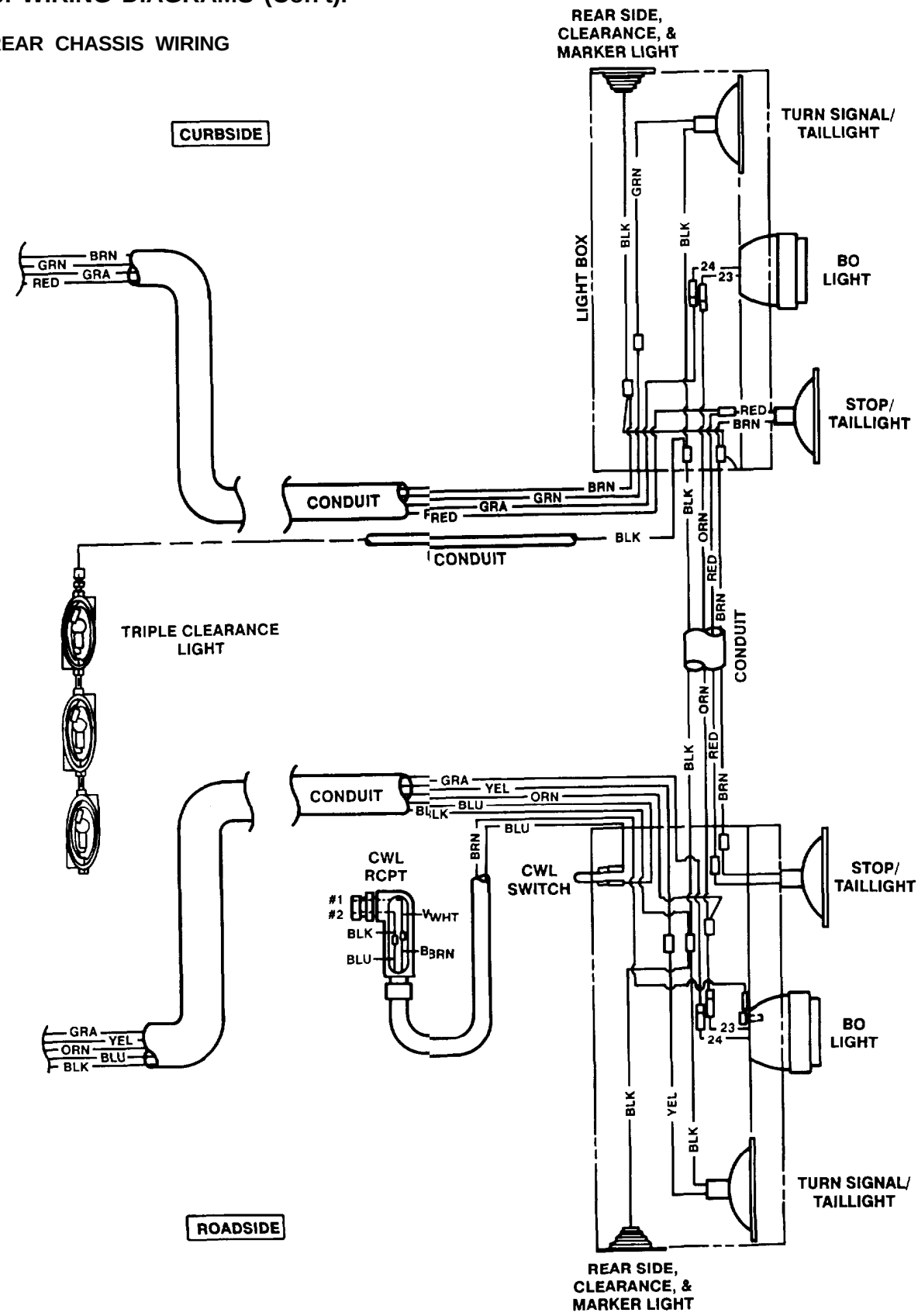
4-30. WIRING DIAGRAMS (Con't).

c. VOLTAGE CONTROL UNIT AND FRONT CHASSIS WIRING



4-30. WIRING DIAGRAMS (Con't).

d. REAR CHASSIS WIRING



Section VI. AXLE ASSEMBLY MAINTENANCE

Paragraph Number	Title	Page Number
4-31	Axle Alinement	4-92
4-32	Bent Axle Check	4-95

4-31. AXLE ALINEMENT.

THIS TASK COVERS

Axle Alinement

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-33	All brake chamber springs caged.

Tools:

- Tool kit, general mechanic's
- 50 ft. steel tape
- Plumb line and bob
- Torque wrench

Materials/Parts:

- Two 5/16X18X2 in. UNC bolts

Personnel Required: Two

AXLE ALINEMENT

NOTE

Before checking alinement, ensure that suspension components are not damaged and that they are tightly secured to axles and frame hangers (see paragraphs 4-55 through 4-57)

(1) Position semitrailer, coupled to tractor, on hard, level ground, preferably concrete. Have operator pull forward in a straight line at least twice to properly center front and rear wheel track.

(2) Uncouple tractor from semitrailer (see paragraph 2-14).

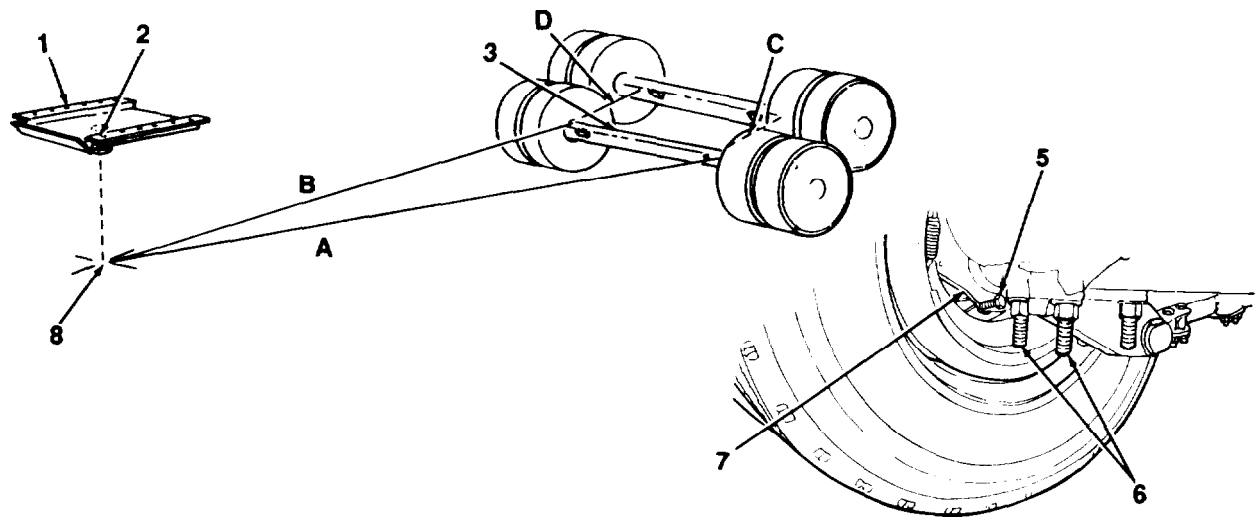
(3) Adjust landing gear so that the underside of upper coupler assembly (1) is 49 in. (124.5 cm) from ground.

(4) Use needle nose pliers to hold plumb line and bob from hole in center of kingpin (2) to ground. Mark spot (8) on ground with a sharp tool.

(5) Install a 5/16X18X2 in. UNC bolt (5) into bottom threaded hole in spider (7) at each end of front axle (3). Ensure that both bolts are threaded into spider the same amount.

(6) Measure distance "A" from marked spot (8) to bolt (5) and record this measurement. Measure distance "B" from marked spot to bolt and record this measurement. Measurements must be within 3/16 in. (4.8 mm) of each other.

4-31. AXLE ALINEMENT (Con't).

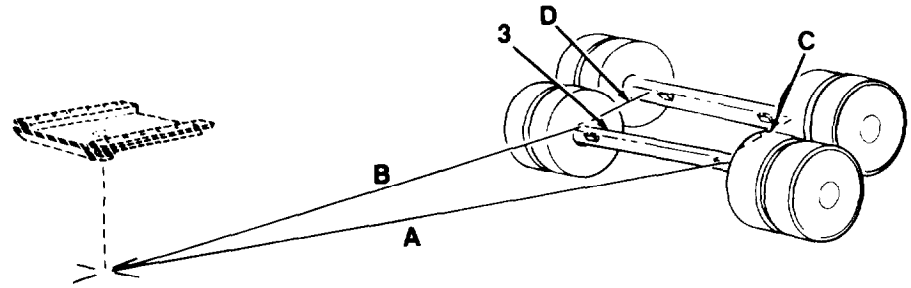


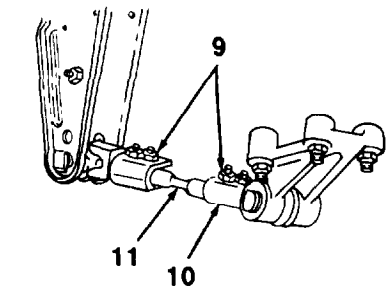
NOTE

To lengthen adjustable radius rod (10), a clockwise rotation (when looking to front) is required.

(7) If front axle (3) needs alinement, loosen four nuts (9) at adjustable radius rod (10) on roadside. Turn middle portion (11) as needed to lengthen or shorten.

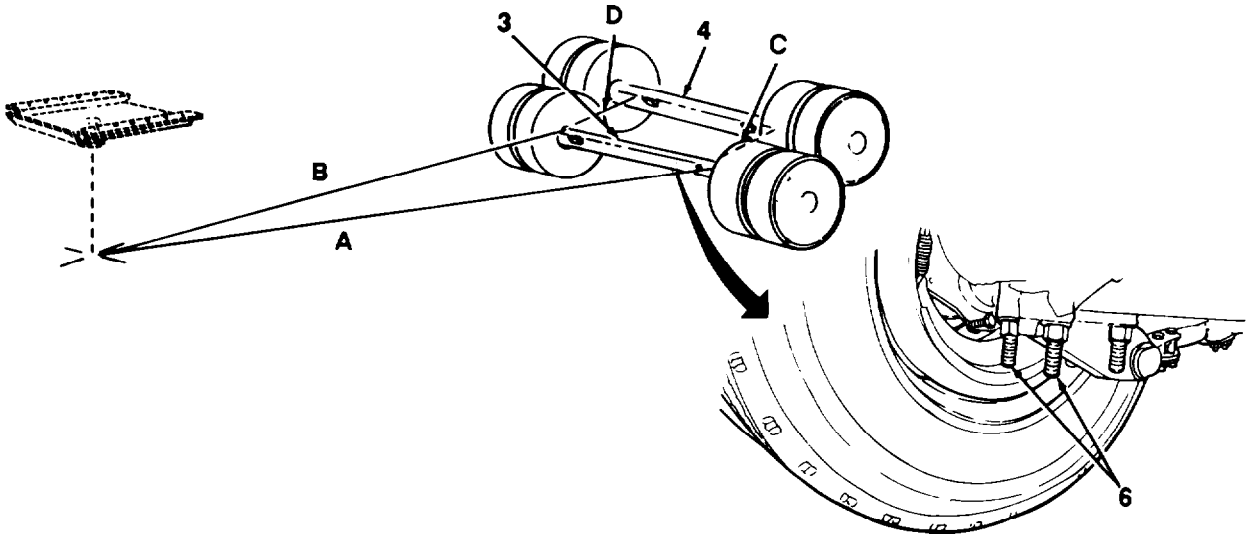
(8) Repeat steps 4 through 7 to check alinement of front axle (3). Continue to adjust length at adjustable radius rod (10) until front axle is alined. Torque four nuts (9) to 110 lb.-ft. (149 N•m).





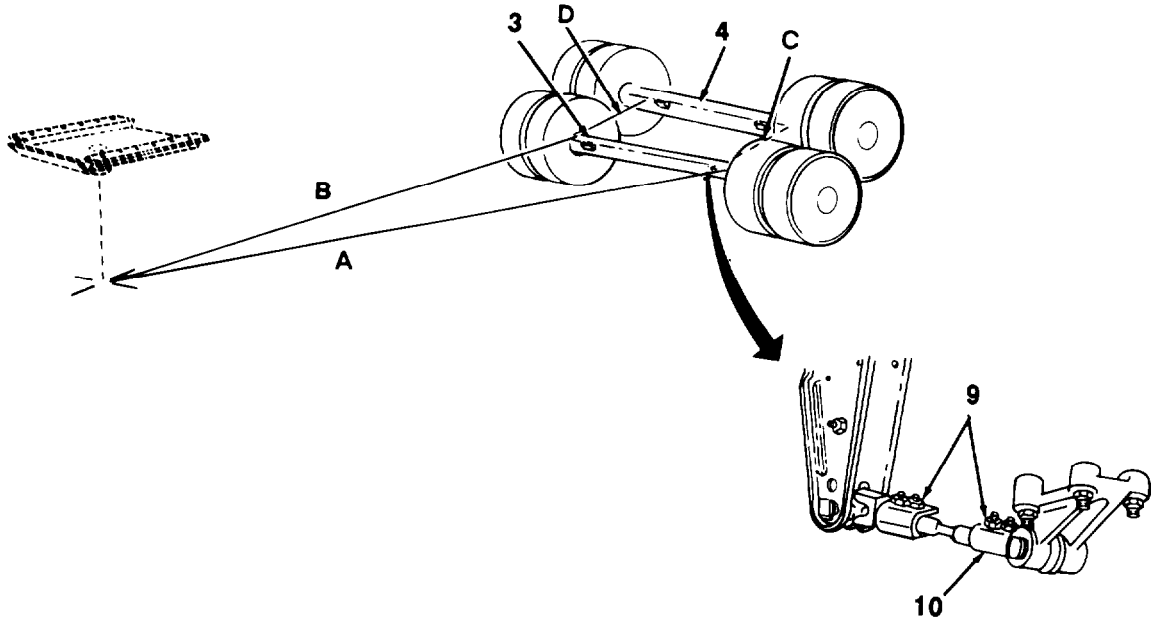
4-31. AXLE ALINEMENT (Con't).

(9) With front axle (3) alined, measure distance “C” between flat face of front axle and fiat face of rear axle (4), outboard of U-bolts (6). Measure distance “D” in same manner, Distances must be within 1/16 in. (1.6 mm) of each other.



(10) If rear axle (4) needs alinement, make adjustments as required at adjustable radius rod (10) at rear axle.

(11) Ensure that four nuts (9) at rear adjustable radius rod (10) are tightened to 110 lb.-ft. (149 N•m) when alinement is finished.



FOLLOW-ON TASKS:

Uncage all brake chamber springs (see paragraph 4-33).

4-32. BENT AXLE CHECK.

THIS TASK COVERS

Bent Axle Check

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-31 Axle alinement checked.
4-48 Rims alined.
4-47 Wheel bearings adjusted.
2-11 Wheels chocked, front and rear.

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstands
- Tape measure

BENT AXLE CHECK

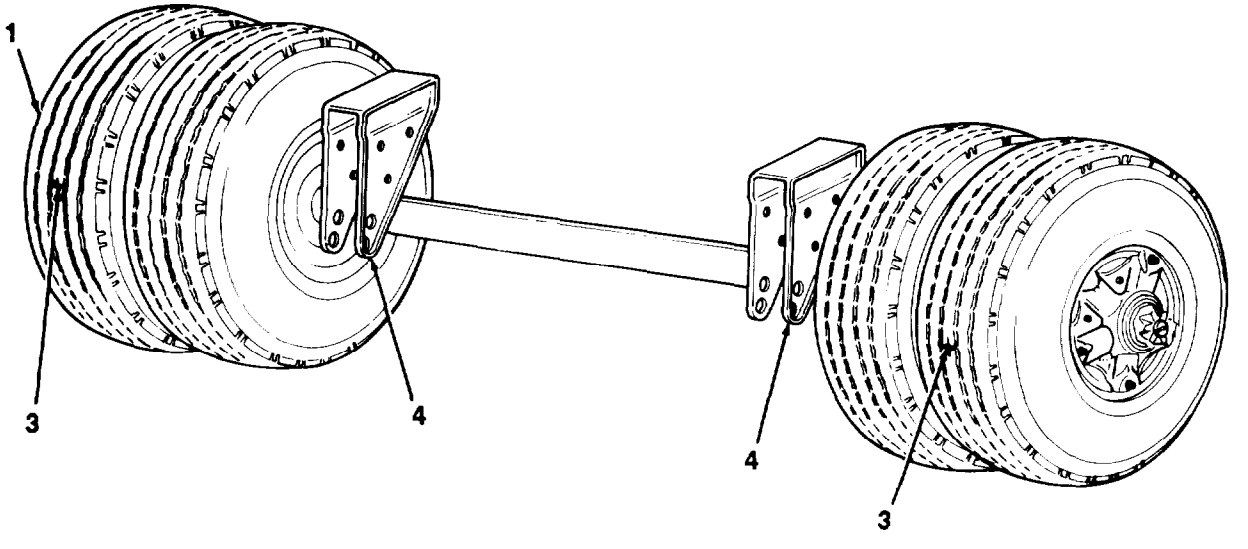
NOTE

To ensure accurate measurements, dual wheel assemblies must have properly matched tires BEFORE proceeding with bent axle check (see paragraph 1-11). Tires must also be equally inflated to 95 psi (655 kPa).

(1) Raise affected axle on a level plane and support on jackstands with wheel 4-6 inches (10.2-15.2 cm) off ground.

(2) Cage brake chamber springs (see paragraph 4-33).

(3) Scribe a vertical line with a horizontal crosshatch mark (3) on center tread of each outer tire (1) at front. Rotate tires so that both crosshatch marks are equal height from ground. Marks should be located level with frame hangers (4) while allowing clearance with underconstruction and frame members when measurements are taken.



4-32. BENT AXLE CHECK (Con't).

(4) Use tape measure to measure distance between crosshatch marks (3). Record measurement.

(5) Turn wheels halfway around so that both crosshatch marks (3) are positioned at rear, Make sure both crosshatch marks are equal height from ground. Measure distance between crosshatch marks. Record measurement.

(6) If difference between front and rear measurements is more than 1/4 in. (6.4 mm), axle (2) is bent.

(7) Determine average side measurement for front and rear by adding both measurements and dividing by two. Record result.

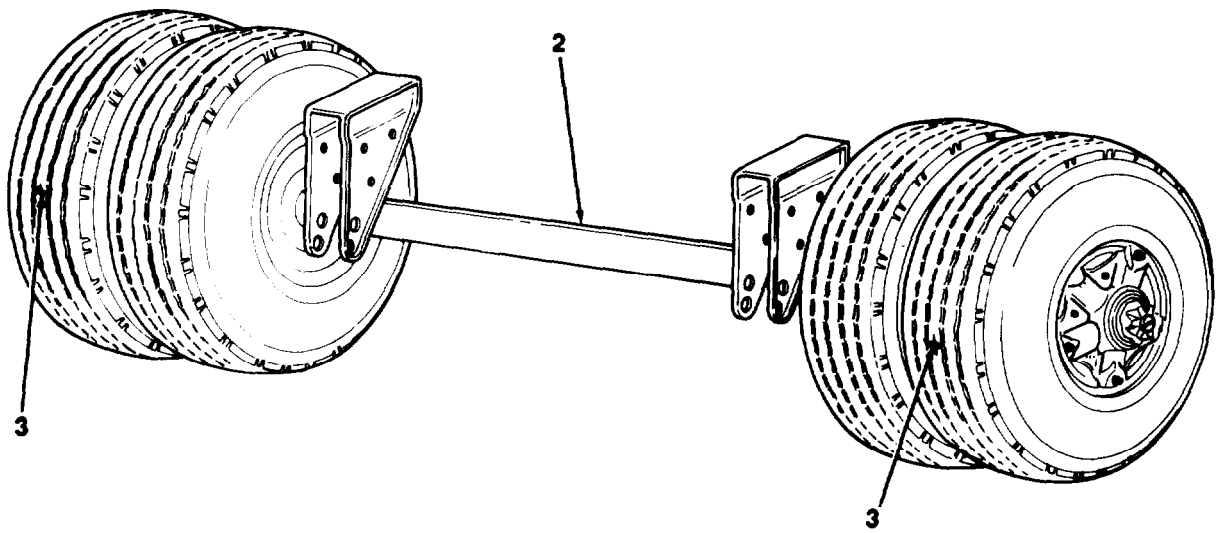
NOTE

Ensure that tape measure is straight and passes through jackstands without interference.

(8) Turn wheels so that crosshatch marks (3) are at bottom. Measure distance between crosshatch marks. Record measurement.

(9) If difference between average side measurement recorded in step 7 and bottom measurement is more than 1/4 in. (6.4 mm), axle (2) is bent.

(10) If a bent axle (2) is found with this procedure, notify direct support maintenance to replace axle.



FOLLOW-ON TASKS:

- Uncage brake chamber springs (see paragraph 4-33).
- Remove jackstands and lower axle.
- Remove and stow chock blocks (see paragraph 2-11).

Section VII. BRAKE SYSTEM MAINTENANCE

Paragraph Number	Title	Page Number
4-33	Caging and Uncaging Brake Chamber Spring	4-97
4-34	Brake Adjustment	4-99
4-35	Brake Shoe Replacement	4-101
4-36	Camshaft Replacement	4-104
4-37	Slack Adjuster Replacement	4-108
4-38	Air Coupling Replacement	4-110
4-39	Air Lines and Fittings Replacement	4-112
4-40	Brake Chamber Replacement	4-119
4-41	Relay Quick Release Valve Maintenance	4-122
4-42	Ratio Relay Valve Maintenance	4-126
4-43	Air Reservoir Replacement	4-130
4-44	Brake Interlock Valves and Fittings Maintenance	4-134

4-33. CAGING AND UNCAGING BRAKE CHAMBER SPRING.

THIS TASK COVERS

a. Caging

b. Uncaging

INITIAL SETUP

Tools:

- Tool kit, general mechanic's

General Safety Instructions:

- DO NOT cage brake chamber spring until chock blocks are properly positioned at wheels.

4-33. CAGING AND UNCAGING BRAKE CHAMBER SPRING (Con't).

a. CAGING

WARNING

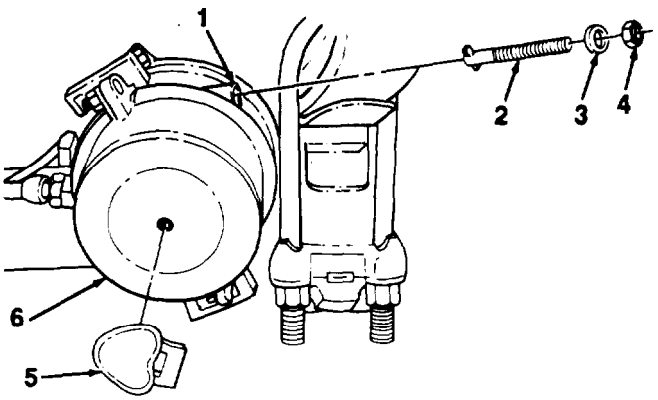
DO NOT cage brake chamber spring until chock blocks are properly positioned at wheels. Once brake chamber springs are caged, the semitrailer is without brakes and can roll. Failure to properly chock wheels may result in serious injury or death to personnel.

(1) Remove chock blocks from stowage brackets and place firmly in front of and behind wheels (see paragraph 2-11).

(2) Remove nut (4), washer (3), and release stud (2) from storage sleeve (1).

(3) Remove dust cap (5) from end of rear brake chamber (6) and set aside. Insert tab end of release stud (2) in hole and turn 1/4 turn to secure in slot inside rear brake chamber.

(4) Install washer (3) and nut (4) on release stud (2). Fully tighten nut to cage spring inside rear brake chamber (6).



b. UNCAGING

(1) Back off nut (4) from release stud (2) in rear brake chamber (6). Remove nut (4), washer (3), and release stud, and install in storage sleeve (1).

(2) Install dust cap (5).

(3) Remove and stow chock blocks (see paragraph 2-11).

4-34. BRAKE ADJUSTMENT.

THIS TASK COVERS

Adjustment

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstand

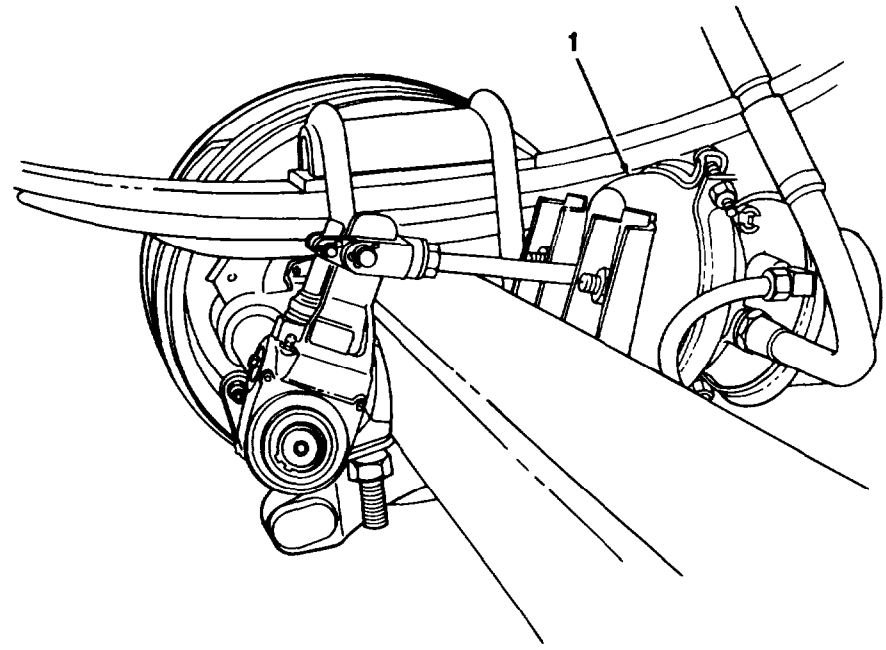
ADJUSTMENT

NOTE

If brake adjustment procedure does not correct wheel drag, wheel bearing adjustment should be checked (see paragraph 4-47).

(1) Place a suitable floor jack under axle in front of brake chamber (1) and raise wheels clear of ground. Support axle with a suitable jackstand.

(2) Cage brake chamber spring (see paragraph 4-33) or connect tractor's EMERGENCY air coupling to semitrailer's EMERGENCY air coupling and supply air to release the spring brakes (see paragraph 2-12).



4-34. BRAKE ADJUSTMENT (Con't).

NOTE

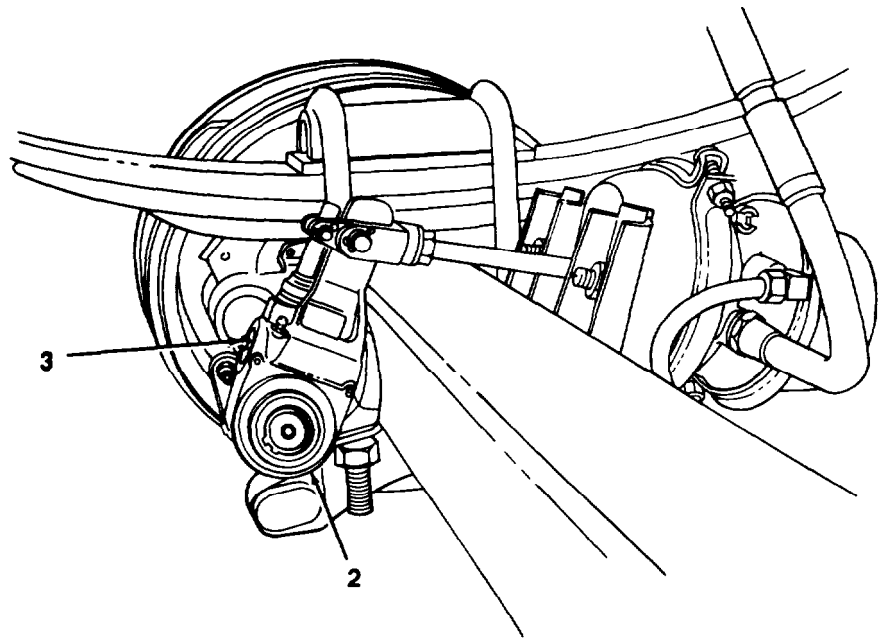
When adjusting nut (3) is turned counterclockwise, it will turn hard and slack adjuster (2) will make a loud ratcheting noise. This is normal.

(3) At slack adjuster (2), turn adjusting nut (3) clockwise until brakes lock, Then turn adjusting nut counterclockwise until wheels turn freely without brake shoe drag.

(4) Uncage brake chamber spring (see paragraph 4-33) or disconnect tractor's EMERGENCY air coupling from semitrailer's EMERGENCY air coupling (see paragraph 2-14).

(5) Remove jackstand and lower axle.

(6) Repeat steps 1 through 5 to adjust brakes at other wheels.



FOLLOW-ON TASKS:

Remove and stow chock blocks (see paragraph 2-11).

4-35. BRAKE SHOE REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-46 Wheel and drum assembly removed.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

- One return spring
- Two shoe retainer springs
- Grease (Item 12, Appendix E)

General Safety Instructions:

- Wipe clean excessive lubricant in the area of brake shoe linings to avoid grease soaking the linings.

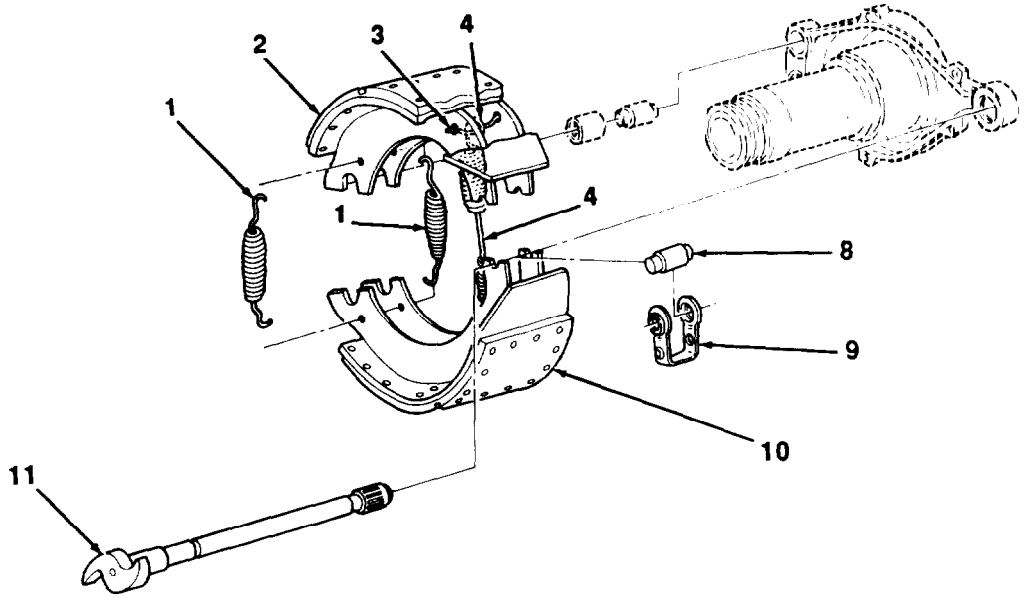
a. REMOVAL

(1) Turn adjusting nut on slack adjuster until S-cam (11) is in released position.

(2) Press down on bottom brake shoe (10) and remove. roller (8) and retainer (9). Lift the top brake shoe (2) and remove roller and retainer.

(3) Remove return spring (4) and two return spring pins (3). Discard return spring.

(4) While holding bottom brake shoe (10), remove two shoe retainer springs (1), and top and bottom brake shoes (2 and 10). Discard shoe retainer springs.

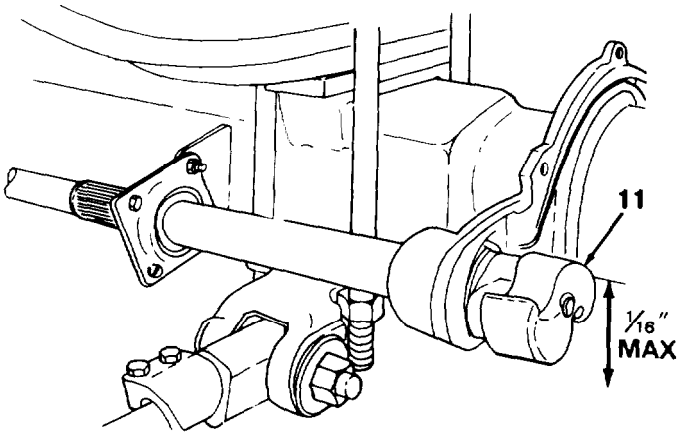


4-35. BRAKE SHOE REPLACEMENT (Con't).

b. INSPECTION

(1) Inspect all removed components for damage. If damaged, replace.

(2) Move S-cam (11) of camshaft up and down by hand, and use a steel rule to measure up-and-down movement. If movement is greater than 1/16 in. (1.59 mm), perform camshaft maintenance to replace camshaft bearings and bushing (see paragraph 4-36).



(3) Inspect spider (7) for damage. If spider is damaged, notify direct support maintenance to replace axle.

(4) Inspect two anchor pins (6) for wear and looseness in bushings (5). Anchor pin should slide smoothly inside bushing.

(5) Install anchor pin (6) inside bushing (5) and move anchor pin up and down by hand. Use a steel rule to measure the up-and-down movement. If movement is greater than 1/16 in. (1.59 mm), anchor pin and bushing must be replaced.

(a) Cut a slot in bushing (5) with a hacksaw blade. Use a chisel to drive out bushing, Discard bushing.

(b) Grease new bushing (5).

(c) Use a block of wood to drive bushing squarely into spider (7).

c. INSTALLATION

WARNING

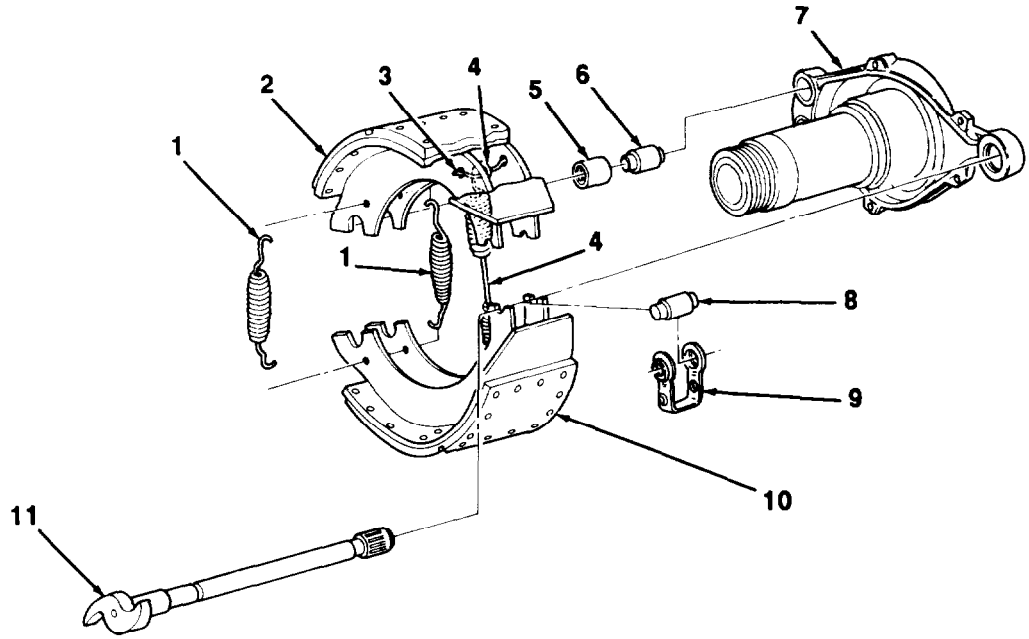
Wipe clean excessive lubricant in the area of brake shoe linings to avoid grease soaking the linings. Replace grease soaked brake shoe linings. Failure to follow this warning may cause brakes to malfunction, resulting in serious injury or death to personnel.

(1) Apply an even coat of grease to two anchor pins (6) and bushings (5). Wipe off excess grease.

(2) Position top brake shoe (2) over spider (7).

(3) Install two new shoe retainer springs (1) to top brake shoe (2) at anchor pin (6) end.

4-35. BRAKE SHOE REPLACEMENT (Con't).



(4) Position bottom brake shoe (10) at anchor pin (6) end. Swing back bottom brake shoe and install two shoe retainer springs (1).

(5) Install two return spring pins (3) and new return spring (4) at S-cam (11) end.

(6) Install roller (8) and retainer (9) between top brake shoe (2) and S-cam (11).

(7) Press down on bottom brake shoe (10) and install roller (8) and retainer (9).

FOLLOW-ON TASKS:

- Install wheel and drum assembly (see paragraph 4-46).
- Adjust brakes (see paragraph 4-34).

4-36. CAMSHAFT REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning and Inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-35	Brake shoes removed.
4-37	Slack adjuster removed,

Tools:

- Tool kit, general mechanic's
- Retaining ring pliers
- Torque wrench

References:

- TM 43-0139

Materials/Parts:

- One bushing
- One retaining ring
- Two bearings
- Four locknuts
- Six preformed packings
- Dry cleaning solvent (Item 10, Appendix E)
- Grease (Item 12, Appendix E)

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

NOTE

- **For ease of removal, it may be necessary to remove carc paint from camshaft (16) (see TM 43-0139).**
- **If removing both camshafts (16) from same axle, tag camshafts. Left-hand and right-hand camshafts are not the same.**

a. REMOVAL

(1) Remove washer (7) from splined end of camshaft (16).

(2) Remove retaining ring (11) from groove of camshaft (16) on inboard side of spider (1) and discard,

(3) Drive camshaft (16) from camshaft bracket (8). Remove washer (12) from inboard side of spider (1).

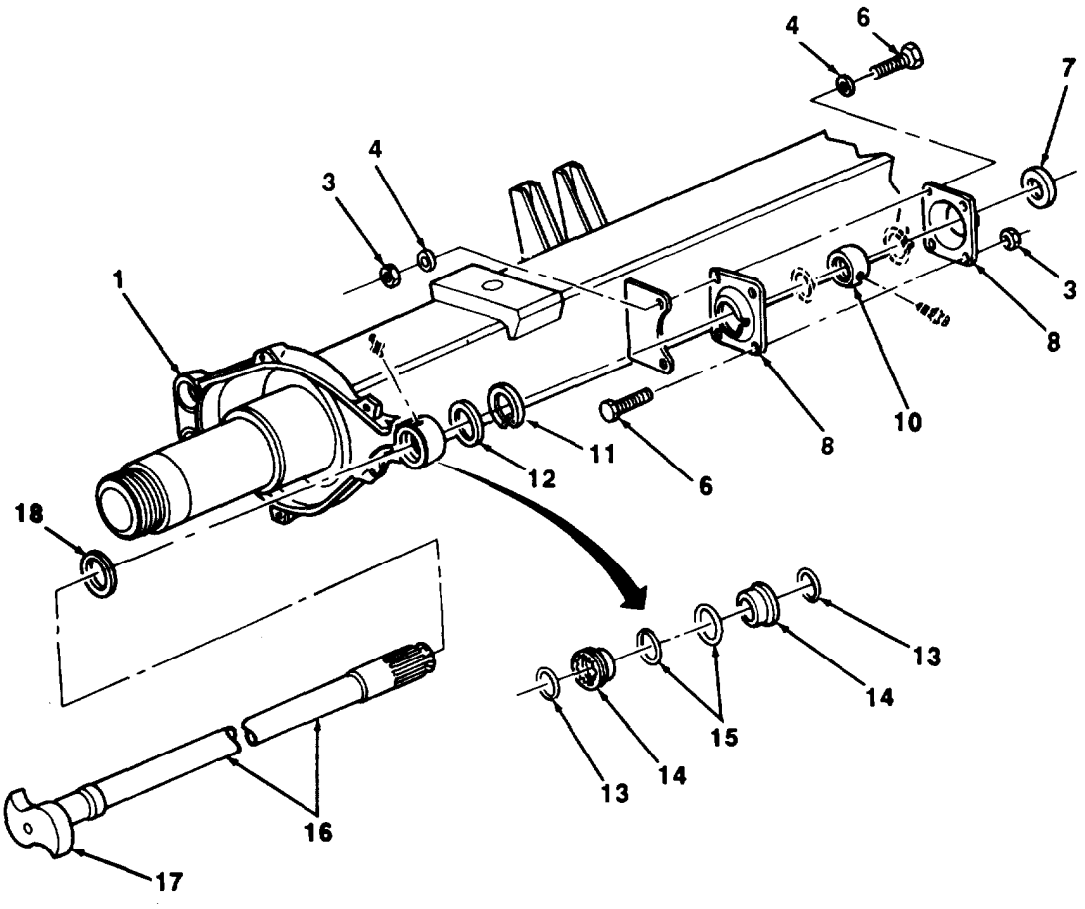
(4) Drive camshaft (16) from spider (1).

(5) Remove one bearing (14) with preformed packings (13 and 15) from spider (1) and discard. Remove other bearing (14) with preformed packings (13 and 15) from camshaft (16) and discard.

(6) Remove washer (18) from camshaft (16).

(7) Remove four locknuts (3), washers (4), and bolts (6), and separate camshaft bracket (8) halves. Remove bushing (10). Discard locknuts and bushing.

4-36. CAMSHAFT REPLACEMENT (Con't).



b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(1) Use dry cleaning solvent to clean dirt and grease from all removed components.

(2) Visually inspect bearing surfaces on camshaft for wear and corrosion. Replace, camshaft if bearing surfaces are corroded or show wear or roughness that can be felt easily by hand.

(3) Visually inspect camshaft S-cam (17) for excessive wear or flat spots along roller surfaces. Replace camshaft if S-cam has excessive wear or flat spots.

4-36. CAMSHAFT REPLACEMENT (Con't).

(4) Visually inspect splined end of camshaft (16) for stripped or worn teeth. Replace camshaft if damaged.

(5) Inspect spider (1) and grease fitting (2) for damage. Remove grease fitting, if damaged. If spider is damaged, notify direct support maintenance to replace axle.

(6) Visually inspect inner surfaces of camshaft bracket (8) halves for burrs, rough areas, or other damage. Replace camshaft bracket halves, if damaged.

c. INSTALLATION

NOTE

If both camshafts (16) were removed from same axle, install as tagged. Left-hand and right-hand camshafts are not the same.

(1) If removed, install new grease fitting (2) to spider (1).

(2) Install new preformed packings (13 and 15) to each bearing (14). Press bearings into spider (1) until fully seated.

NOTE

Washers (4) are installed on bolts (6) closest to axle.

(3) Install two new preformed packings (5) to bushing (10). Assemble bushing and camshaft bracket (8) halves with grease fitting (9) facing outboard. Install camshaft bracket halves to axle bracket with four bolts (6), washers (4), and new locknuts (3). Do not fully tighten locknuts.

(4) Install washer (18) onto camshaft (16). Drive camshaft through spider (1).

(5) Apply grease to two bearings (14) inside spider (1). Slide washer (12) and new retaining ring (11) onto camshaft (16), inboard of spider. Drive camshaft through camshaft bracket (8). Tap on S-cam (17) to ensure camshaft is fully installed. Ensure also that S-cam is in released position (see paragraph 4-35).

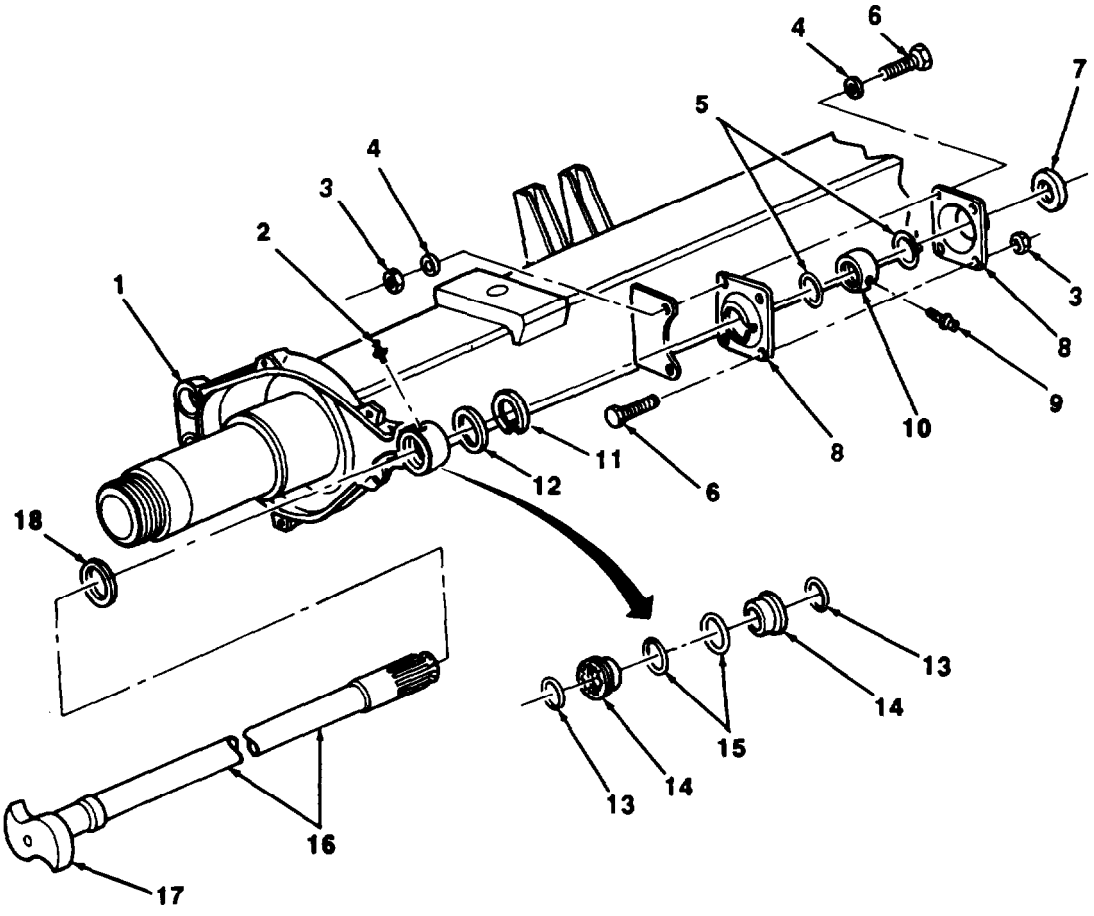
(6) Ensure that inner bearing (14) is fully seated and retaining ring (11) groove on camshaft (16) is visible. Install retaining ring (11) on camshaft on inboard side of spider (1).

(7) Torque four locknuts (3) to 15 lb.-ft. (20 N•m).

(8) Install washer (7) on splined end of camshaft (16).

(9) Lubricate grease fittings (2 and 9).

4-36. CAMSHAFT REPLACEMENT (Con't).



FOLLOW-ON TASKS:

- Install slack adjuster (see paragraph 4-37).
- Install brake shoes (see paragraph 4-35).

4-37. SLACK ADJUSTER REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-33 Brake chamber spring caged.

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstands
- Retaining ring pliers

Materials/Parts:

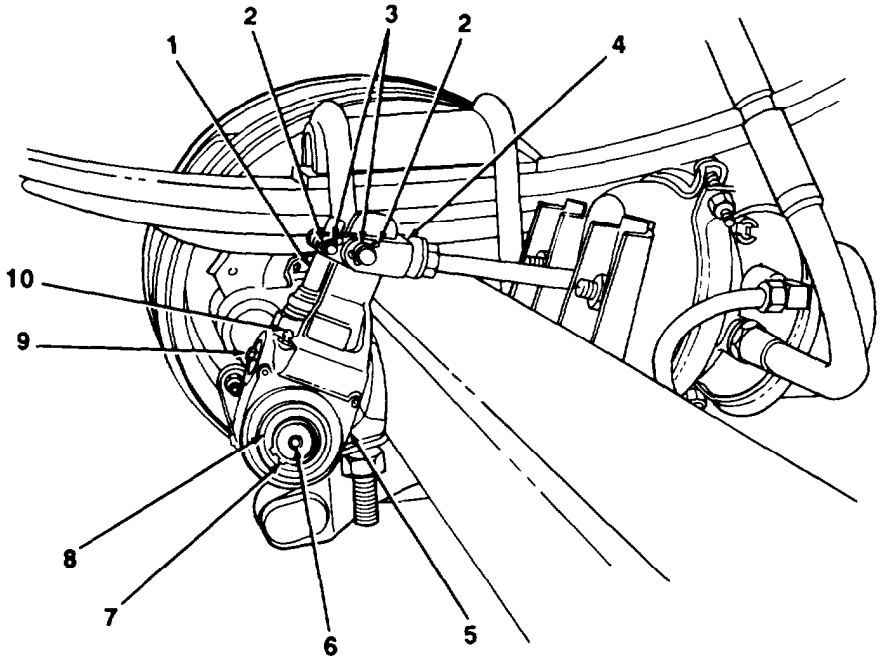
- One retaining ring
- Two cotter pins
- Grease (Item 12, Appendix E)

a. REMOVAL

(1) Remove two cotter pins (2) and discard. Remove two clevis pins (3).

(2) Turn adjusting nut (9) on slack adjuster (5) clockwise to gain free play.

(3) Remove retaining ring (7) and washer (8) at slack adjuster (5). Remove slack adjuster. Discard retaining ring.



4-37. SLACK ADJUSTER REPLACEMENT (Con't).

b. INSPECTION

Inspect splines on camshaft (6) and slack adjuster (5) for damage. If camshaft is damaged, replace (see paragraph 4-36). If splines on slack adjuster are damaged, replace.

c. INSTALLATION

(1) Install slack adjuster (5) to camshaft (6) with offset actuator rod (1) on side of slack adjuster facing inside. Install washer (8) and new retaining ring (7).

(2) Turn adjusting nut (9) on slack adjuster (5) counterclockwise until clevis pin holes in slack adjuster aline with holes in clevis (4).

(3) Install two clevis pins (3). Install two new cotter pins (2).

(4) Lubricate grease fitting (10).

FOLLOW-ON TASKS:

- Uncage brake chamber spring (see paragraph 4-33).
- Couple semitrailer to tractor and check operation of brakes (see paragraph 2-12).

4-38. AIR COUPLING REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Installation
c. Seal Replacement

/NIT/AL SETUP

Equipment Conditions:

Ref Conditions
2-14 Tractor EMERGENCY and SERVICE air couplings disconnected from semi-trailer.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

- Detergent (Item 9, Appendix E)
- Antiseize tape (Item 22, Appendix E)

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

a. REMOVAL

NOTE

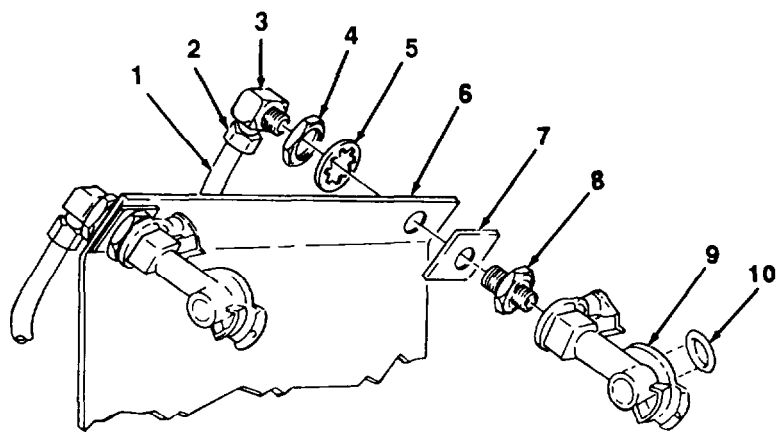
EMERGENCY and SERVICE air couplings are removed the same.

(1) Loosen nut (4). Hold elbow (3) and remove terminal bolt (8) and air coupling (9) assembly from elbow.

(2) Remove nut (4) and stat-washer (5). Remove terminal bolt (8) and air coupling (9) assembly from nose adapter (6). Remove EMERGENCY or SERVICE tag (7).

(3) Remove air coupling (9) from terminal bolt (8).

(4) If damaged, remove nut (2) and elbow (3) from air line (1).



4-38. AIR COUPLING REPLACEMENT (Con't).

b. INSTALLATION

NOTE

- **EMERGENCY and SERVICE air couplings are installed the same.**
- **Antiseize tape should be applied at connection between elbow (3), terminal bolt (8), and air coupling (9).**

(1) If removed, install elbow (3) to air line (1) and tighten nut (2).

(2) Install air coupling (9) to terminal bolt (8).

NOTE

EMERGENCY tag (7) is installed roadside: SERVICE tag (7) is installed curbside.

(3) Position tag (7) at nose adapter (6). Install terminal bolt (8) and air coupling (9) assembly through tag and hole in nose adapter.

(4) Install starwasher (5) on terminal bolt (8). Loosely install nut (4).

NOTE

Ensure that air coupling (9) is properly positioned when tight.

(5) Hold elbow (3) and tighten terminal bolt (8) at elbow.

(6) Hold terminal bolt (8) and tighten nut (4).

(7) Connect tractor EMERGENCY and SERVICE air couplings to semitrailer (see paragraph 2-12).

(8) Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

(9) Apply a soap solution to check for leaks at air coupling.

c. SEAL REPLACEMENT

NOTE

Dummy coupling seal is replaced the same.

(1) Remove seal (10) from air coupling (9).

(2) Clean groove in air coupling (9) where seal (10) was removed.

(3) Partially collapse replacement seal (10) with fingers. Insert one side of seal flange in groove of air coupling (9).

(4) Push seal (10) into place. Face of seal must lie flat, with no twist or bulge.

4-39. AIR LINES AND FITTINGS REPLACEMENT.

THIS TASK COVERS

a. Replacement of Front Air Lines and Fittings
b. Replacement of Brake Interlock Assembly Air Lines
c. Replacement of Underconstruction Air Lines and Fittings

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.
2-14	Tractor EMERGENCY and SERVICE air couplings disconnected from semitrailer.

Tools:

* Tool kit, general mechanic's

Materials/Parts:

- Tag marker (Item 21, Appendix E)
- Antiseize tape (Item 22, Appendix E)

General Safety Instructions;

- Ensure that air lines do not rub against each other or any other surface when installed.

a. REPLACEMENT OF FRONT AIR LINES AND FITTINGS

WARNING

Ensure that air lines (4 and 9) do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting in brake lockup and possible serious Injury or death to personnel.

NOTE

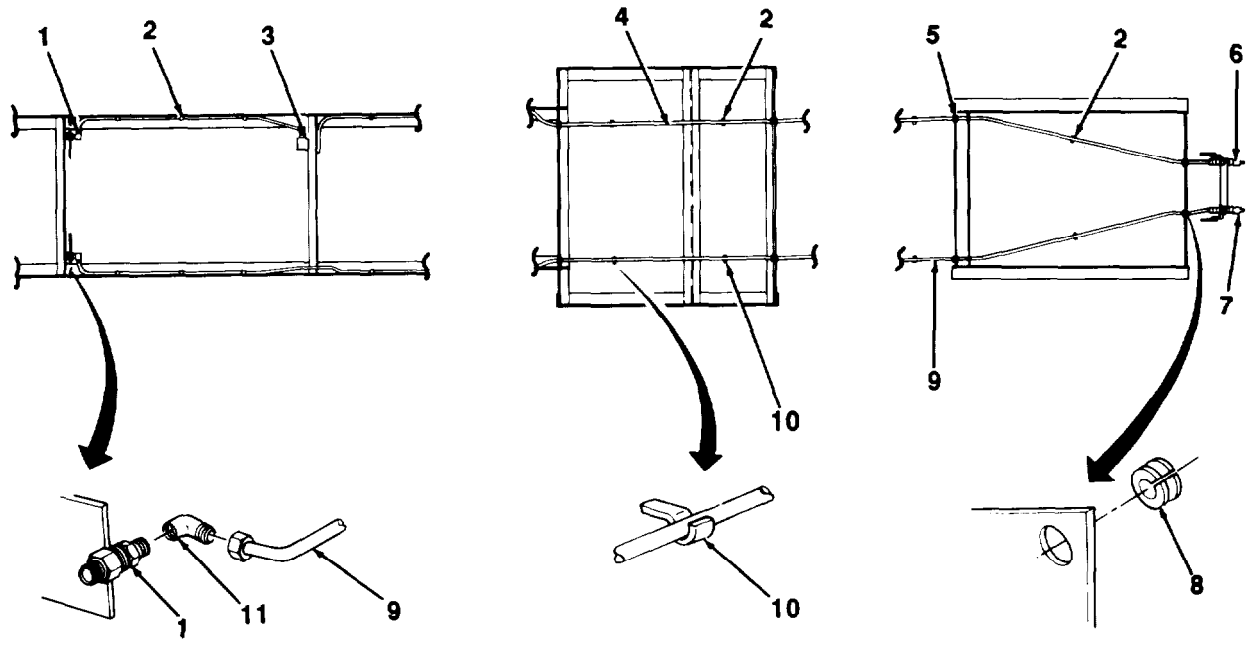
All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) To replace a leaking or damaged air coupling (6 or 7), refer to paragraph 4-38.

(2) Replace any leaking or damaged air lines (4 and 9), elbows (11), or terminal bolts (1).

(3) Replace any damaged grommets (5 and 8). To remove a grommet, air line (4 or 9) must first be removed.

4-39. AIR LINES AND FITTINGS REPLACEMENT (Con't).



1. Terminal bolt
2. 3/8 outside diameter clip
3. Brake interlock installation
4. 3/8 in. outside diameter EMERGENCY air line
5. 7/16 In. inside diameter grommet
6. EMERGENCY air coupling
7. SERVICE air coupling
8. 11/16 In. inside diameter grommet
9. 1/2 in. outside diameter SERVICE air line
10. 1/2 in. outside diameter clip
11. 90 degree elbow

CAUTION

- **Use caution when removing or installing air lines (4 or 9) at clips (2 or 10). Clips should be lifted gently and only enough to release air lines. When securing air lines under clips, a soft-faced hammer should be used to tap clips back into place. Improper handling of clips will cause them to break.**
- **If two or more consecutive clips (2 or 10) are missing or damaged, air lines (4 or 9) will not be adequately supported. Damage to air lines may result.**

(4) If two of more consecutive clips (2 or 10) are missing or damaged, notify direct support maintenance.

4-39. AIR LINES AND FITTINGS REPLACEMENT (Con't).

b. REPLACEMENT OF BRAKE INTERLOCK ASSEMBLY AIR LINES

WARNING

Ensure that air lines (4) do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

- **For information on replacement of brake interlock valves and fittings, refer to paragraph 4-44.**
- **All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **If replacing more than one air line (4). tag for installation.**

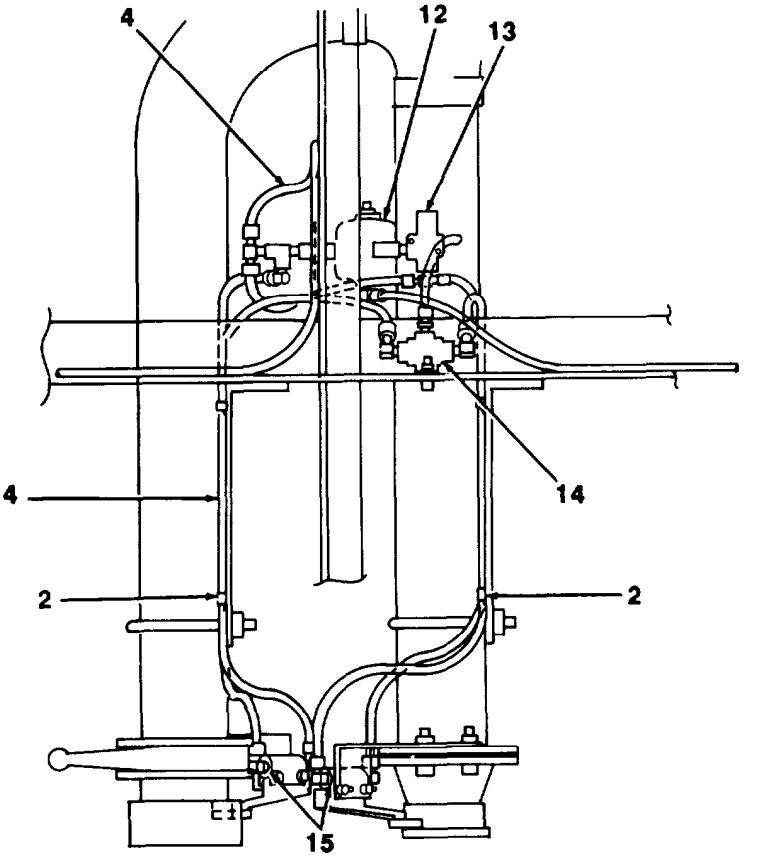
(1) Replace any leaking or damaged air lines (4).

CAUTION

- **Use caution when removing or installing air lines (4) at clips (2). Clips should be lifted gently and only enough to release air lines. When securing air lines under clips, a soft-faced hammer should be used to tap clips back into place. Improper handling of clips will cause them to break.**
- **If two or more consecutive clips (2) are missing or damaged, air lines (4) will not be adequately supported. Damage to air lines may result.**

(2) If two or more consecutive clips (2) are damaged or missing, notify direct support maintenance.

4-39. AIR LINES AND FITTINGS REPLACEMENT (Con't).



2. 3/8 In. outside diameter clip
4. 3/8 in. outside diameter EMERGENCY air line
12. Relay quick release valve
13. Inversion valve
14. Shuttle valve
15. Brake interlock valves

4-39. AIR LINES AND FITTINGS REPLACEMENT (Con't).

c. REPLACEMENT OF UNDERCONSTRUCTION AIR LINES AND FITTINGS

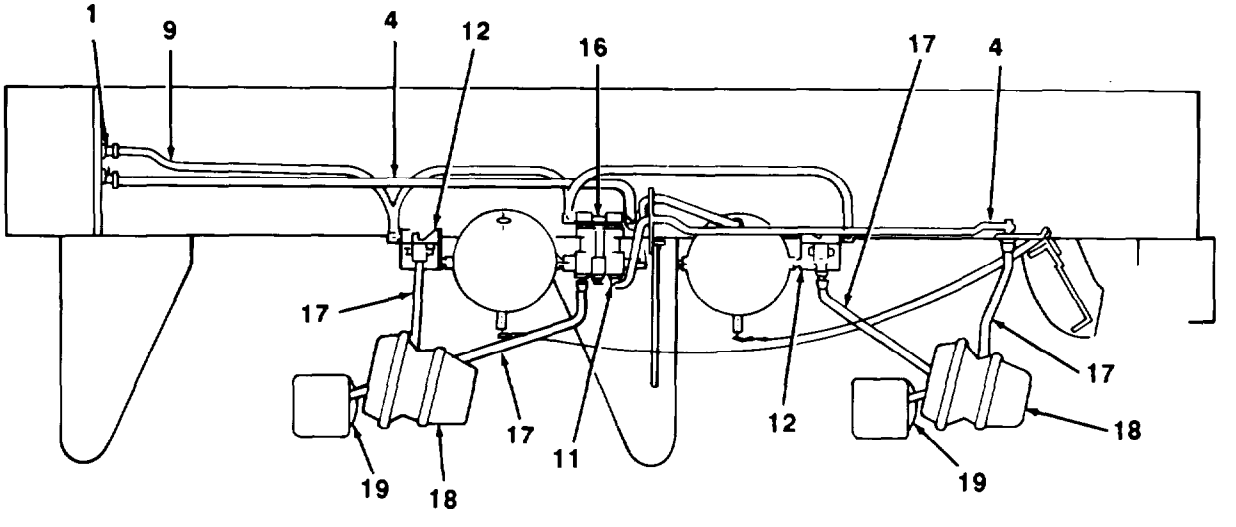
WARNING

Ensure that air lines (4 and 9) and hose assemblies (17) do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines or hose assemblies rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

- **All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **If replacing more than one air line (4 and 9) or hose assembly (17), tag for installation.**

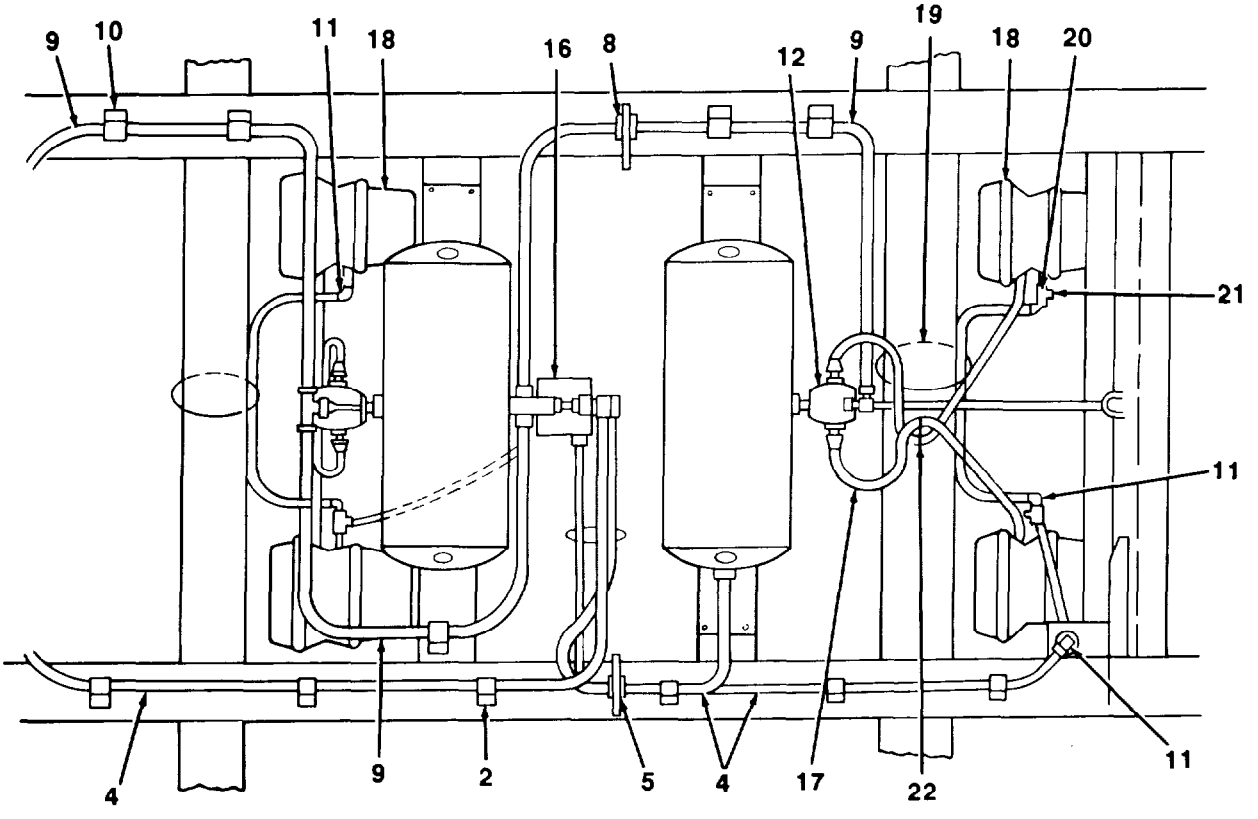
(1) Release all air from front and rear air reservoirs by pulling air reservoir draincock cable (see paragraph 2-2).



1 Terminal bolt
4. 3/8 in. outside diameter EMERGENCY air line
9. 1/2 In. outside diameter SERVICE air line
11. 90 degree elbow
12. Relay quick release valve
16. Ratio relay valve
17. 1/2 in. hose assemblies
18. Brake chamber
19. Tie-strap

(2) Replace any leaking or damaged air lines (4 and 9), hose assemblies (17), grommets (5 and 8), elbows (11), plugs (21), and tees (20). To remove a damaged grommet, air line (4 or 9) must first be removed.

4-39. AIR LINES AND FITTINGS REPLACEMENT (Con't).



2. 3/8 in. outside diameter clip
4. 3/8 in. outside diameter EMERGENCY air line
5. 7/16 in. inside diameter grommet
8. 11/16 in. inside diameter grommet
9. 1/2 in. outside diameter SERVICE air line
10. 1/2 in. outside diameter clip
11. 90 degree elbow
12. Relay quick release valve
16. Ratio relay valve
17. 1/2 in. hose assemblies
18. Brake chamber
19. Tie-strap
20. Tee
21. Plug
22. Hose separator

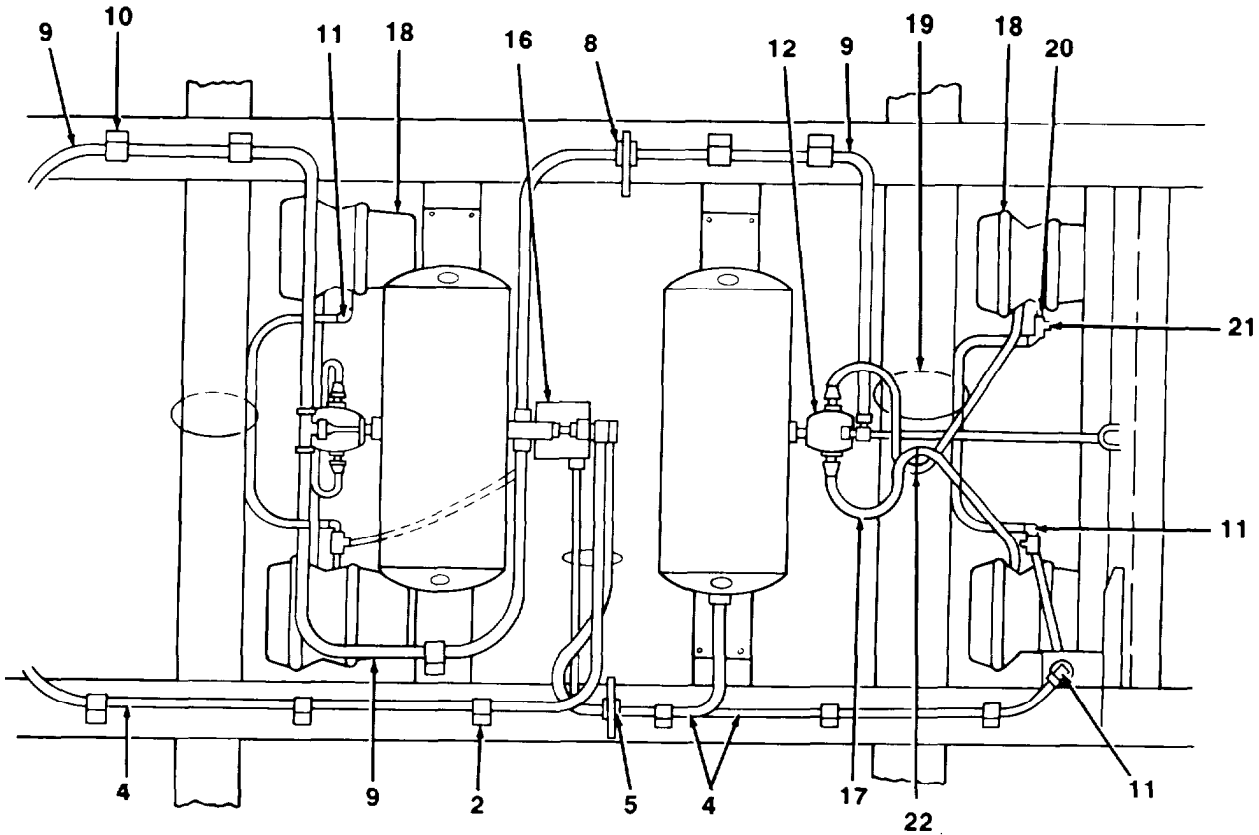
CAUTION

- **Use caution when removing or installing air lines (4 or 9) at clips (2 or 10). Clips should be lifted gently and only enough to release air lines. When securing air lines under clips, a soft-faced hammer should be used to tap clips back into place. Improper handling of clips will cause them to break.**
- **If two or more consecutive clips (2 or 10) are missing or damaged, air lines (4 or 9) will not be adequately supported. Damage to air lines may result.**

(3) If two or more consecutive clips (2 or 10) are damaged or missing, notify direct support maintenance.

4-39. AIR LINES AND FITTINGS REPLACEMENT (Con't).

(4) Use tie-straps (19) whenever air lines (4 or 9) need support. Use hose separators (22) between air lines or hose assemblies (17) to prevent them from rubbing.



2. 3/8 in. outside diameter clip
4. 3/8 in. outside diameter EMERGENCY air line
5. 7/16 in. inside diameter grommet
8. 11/16 In. inside diameter grommet
9. 1/2 in. outside diameter SERVICE air line
10. 1/2 in. outside diameter clip
11. 90 degree elbow
12. Relay quick release valve
16. Ratio relay valve
17. 1/2 In. hose assemblies
18. Brake chamber
19. Tie-strap
20. Tee
21. Plug
22. Hose separator

FOLLOW-ON TASKS:

- Connect tractor EMERGENCY and SERVICE air couplings to semitrailer (see paragraph 2-12).
- Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-1 0). Use a soap solution to check for leaks.
- Remove and stow chock blocks (see paragraph 2-11).

4-40. BRAKE CHAMBER REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-33	Brake chamber spring caged.

Tools:

- Tool kit, general mechanic's
- Torque wrench

Materials/Parts:

- Two cotter pins
- Two locknuts
- Detergent (item 9, Appendix E)
- Tag marker (Item 21, Appendix E)

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

a. REMOVAL

NOTE

If both brake chambers on axle are to be removed, ensure that both brake chamber springs are caged before proceeding.

(1) Release all air from front and rear air reservoirs by pulling on air reservoir draincock cable (see paragraph 2-2).

4-40. BRAKE CHAMBER REPLACEMENT (Con't).

NOTE

Roadside brake chamber (7) has three air lines. Curbside brake chamber has two air lines.

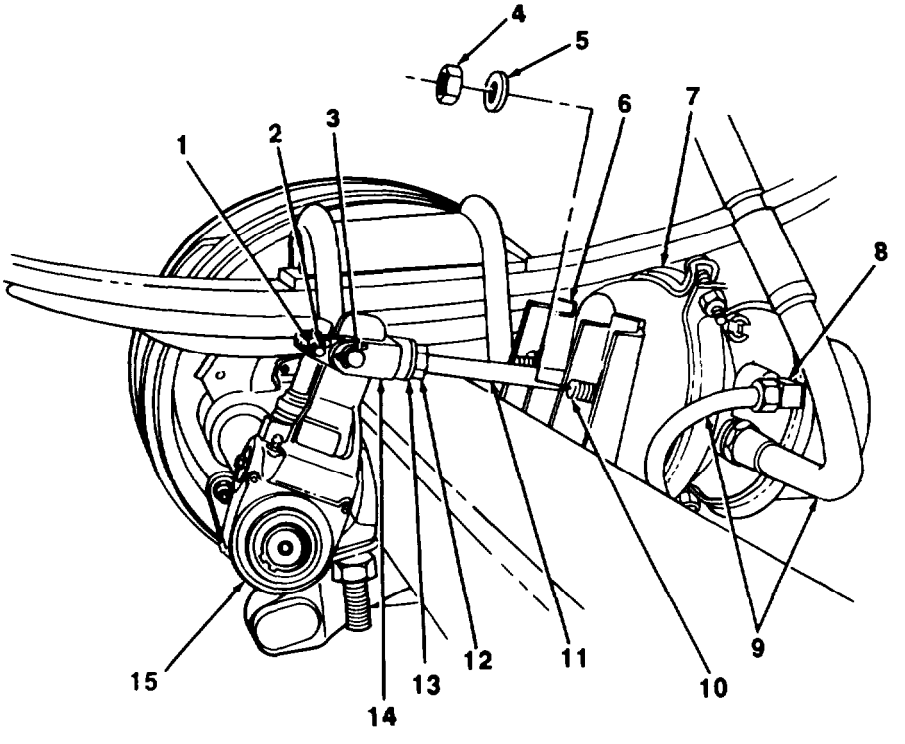
(2) Tag and disconnect all air lines (9) from brake chamber (7).

(3) Measure threaded length of pushrod (11) and record measurement. Remove two cotter pins (1) and clevis pins (2 and 3). Discard cotter pins.

(4) Remove two locknuts (4) and washers (5) from two mounting studs (IO). Remove brake chamber (7). Discard locknuts.

(5) Remove fittings (8) from brake chamber (7) and retain.

(6) If replacing brake chamber (7), remove clevis (14) and jamnut (12) from pushrod (11) and retain.



b. INSTALLATION

(1) Install fittings (8) to brake chamber (7).

NOTE

Clevis (14) furnished with replacement brake chamber (7) will not fit M1062 slack adjuster (15). It should be discarded and clevis which comes with the slack adjuster used instead.

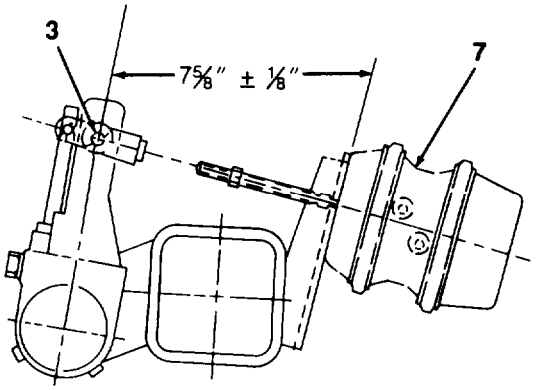
(2) If a new brake chamber (7) is being installed, remove clevis (14) and jamnut (12) from pushrod (11) and discard. Install clevis and jamnut retained from original brake chamber. Ensure that threaded length of pushrod is the same as when removed.

4-40. BRAKE CHAMBER REPLACEMENT (Con't).

(3) Position brake chamber (7) with mounting studs (10) through brake chamber bracket (6). Install two washers (5) and new locknuts (4). Torque locknuts to 130 lb.-ft. (176 N•m).

(4) Install two clevis pins (2 and 3) and two new cotter pins (1).

(5) Measure distance from clevis pin (3) to face of brake chamber (7). Distance should be 7 5/8 in. (19.4 cm) ± 1/8 in. (0.3 cm).



(6) If adjustment in distance is needed, back off jamnut (12) and turn adjusting nut (13) to adjust length of brake chamber pushrod (11). Tighten jamnut.

(7) Connect all air lines (9) to brake chamber (7) as tagged.

(8) Adjust brakes (see paragraph 4-34).

(9) Couple semitrailer to tractor (see paragraph 2-12).

(10) Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

(11) Apply a soap solution to check for leaks at brake chamber (7) and air lines (9).

FOLLOW-ON TASKS:

- Uncage brake chamber spring (see paragraph 4-33).
- Check operation of brake chamber.

4-41. RELAY QUICK RELEASE VALVE MAINTENANCE.

THIS TASK COVERS

a. Operating Test
b. Leakage Test
c. Removal
d. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Channel lock oliers
- Face shield
- Safety goggles

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

Materials/Parts:

- Detergent (Item 9, Appendix E)
- Tag marker (Item 21, Appendix E)
- Antiseize tape (Item 22, Appendix E)

Personnel Required: Two

General Safety Instructions:

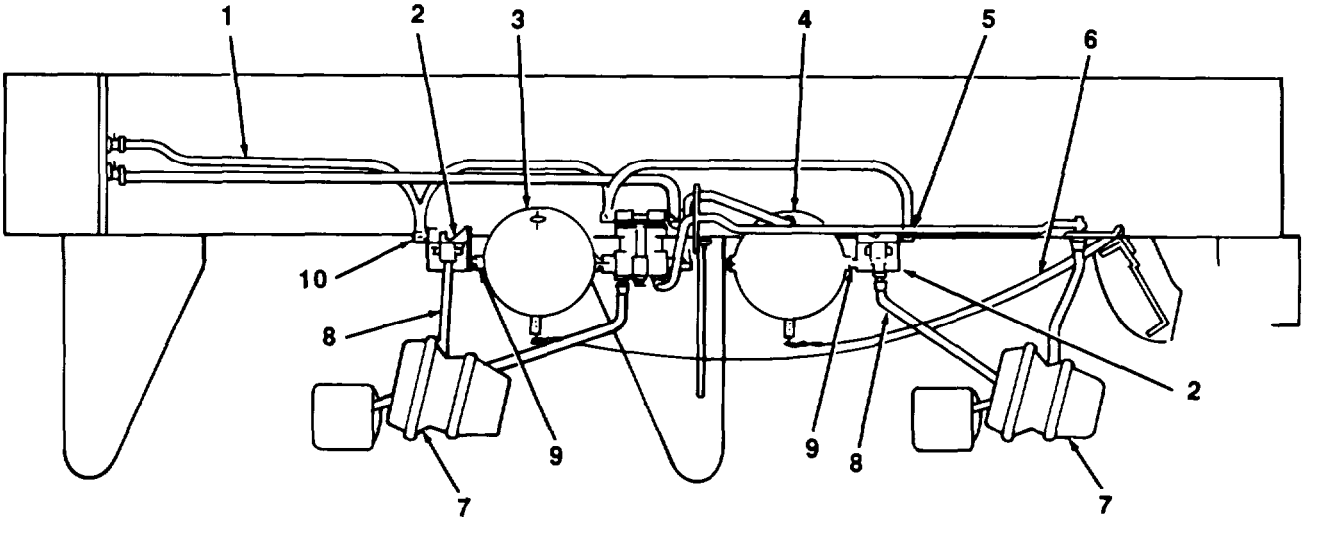
- Wear safety goggles and face shield when performing leakage tests on relay quick release valves.
- Ensure that air lines do not rub against each other or any other surface when installed.

a. OPERATING TEST

(1) If disconnected, connect tractor EMERGENCY and SERVICE air couplings to semitrailer (see paragraph 2-12). Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-1 0).

(2) Apply tractor service brakes and check that semitrailer brakes apply properly (see paragraph 2-12).

(3) Release brakes and check whether air pressure is exhausted through exhaust port on underside of relay quick release valves (2).



4-41. RELAY QUICK RELEASE VALVE MAINTENANCE (Con't).

b. LEAKAGE TEST

WARNING

Wear safety goggles and face shield when performing leakage tests on relay quick release valves (2). Failure to follow this warning may result in serious eye injury due to high pressure air.

NOTE

If there are leaks found which cannot be corrected after performing steps 1 and 2, remove relay quick release valve (2) and replace damaged components.

(1) With air system fully pressurized, apply a soap solution to relay quick release valves (2) and check for leaks. No leakage is allowed. If leaks are found, tighten fittings.

(2) Release brakes and allow two seconds for air to exhaust from exhaust port on underside of relay quick release valves (2), Apply soap solution to exhaust port and check for leaks. No leakage is allowed.

c. REMOVAL

NOTE

- **Tag air lines, fittings, and valve ports as they are removed to ensure proper installation.**
- **If disconnecting air** lines **to remove air reservoir (3 or 4), perform steps 1, 2, and 4.**

(1) Disconnect tractor EMERGENCY and SERVICE air couplings from semitrailer (see paragraph 2-14). Pull on draincock cable (6) and release all air from front and rear air reservoirs (3 and 4).

(2) Disconnect two air lines (8) from brake chambers (7).

(3) Remove two air lines (8) from relay quick release valve (2).

NOTE

There are two SERVICE air lines (1) connected to tee (10) at relay quick release valve (2) at front air reservoir (3).

(4) Disconnect SERVICE air line (1) from elbow (5) at top of relay quick release valve (2).

(5) Use channel lock pliers to remove relay quick release valve (2) from nipple (9) at air reservoir (3 or 4).

(6) If removing relay quick release valve (2) from front air reservoir (3), remove tee (10). If removing relay quick release valve from rear air reservoir (4), remove elbow (5).

(7) Inspect tee (10) and elbow (5) for cracks or damaged threads. If damaged, replace.

4-41. RELAY QUICK RELEASE VALVE MAINTENANCE (Con't).

d. INSTALLATION

WARNING

Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. if air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

- **Ail male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **install ail air** lines **and fittings to valve ports as tagged.**
- **if connecting air lines after installing air reservoir (3 or 4), perform steps 3, 5, and 6.**

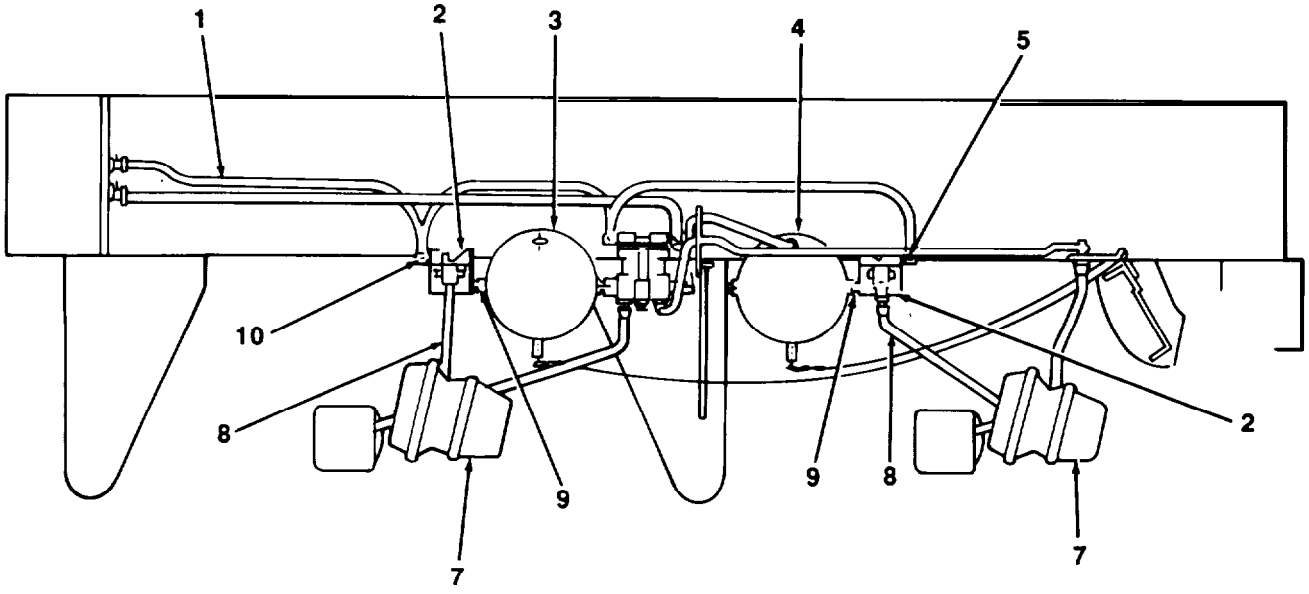
(1) if installing relay quick release valve (2) to front air reservoir (3), install tee (10). If installing relay quick release valve to rear air reservoir (4), install elbow (5).

(2) install relay quick release valve (2) to nipple (9) at air reservoir (3 or 4).

NOTE

There are two SERVICE air lines (1) connected to tee (10) at relay quick release valve (2) at front air reservoir (3).

(3) Connect SERVICE air line (1) to elbow (5) at top of relay quick release valve (2).



4-41. RELAY QUICK RELEASE VALVE MAINTENANCE (Con't).

(4) Connect two air lines (8) to sides of relay quick release valve (2).

(5) Connect two air lines (8) to brake chambers (7).

(6) Connect tractor EMERGENCY and SERVICE air couplings to semitrailer (see paragraph 2-12). Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

FOLLOW-ON TASKS:

- Perform OPERATING TEST (this paragraph).
- Perform LEAKAGE TEST (this paragraph).
- Remove and stow chock blocks (see paragraph 2-11).

4-42. RATIO RELAY VALVE MAINTENANCE.

THIS TASK COVERS

a. Operating Test
b. Leakage Test
c. Removal
d. installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Face shield
- Safety goggles

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

Materials/Parts:

- Detergent (item 9, Appendix E)
- Tag marker (item 21, Appendix E)
- Antiseize tape (item 22, Appendix E)

Personnel Required: Two

General Safety instructions:

- Wear safety goggles and face shield when performing leakage tests on ratio relay valve.
- Ensure that air lines do not rub against each other or any other surface when installed.

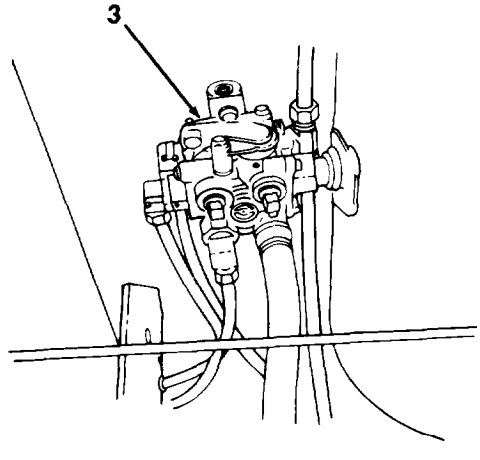
a. OPERATING TEST

(1) If disconnected, connect tractor EMERGENCY and SERVICE air lines to semitrailer (see paragraph 2-12). Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

NOTE

Damage to other parts of air system may cause parking/emergency brakes to not release with air fully pressurized.

(2) With air system fully pressurized, check to see that parking/emergency brakes are released. if not released, ratio relay valve (3) may be damaged.



4-42. RATIO RELAY VALVE MAINTENANCE (Con't).

b. LEAKAGE TEST

WARNING

Wear safety goggles and face shield when performing leakage tests on ratio relay valve (3). Failure to follow this warning may result in serious eye injury due to high pressure air.

NOTE

if leaks are found which cannot be corrected after performing leakage test, remove ratio relay valve (3) and replace damaged components.

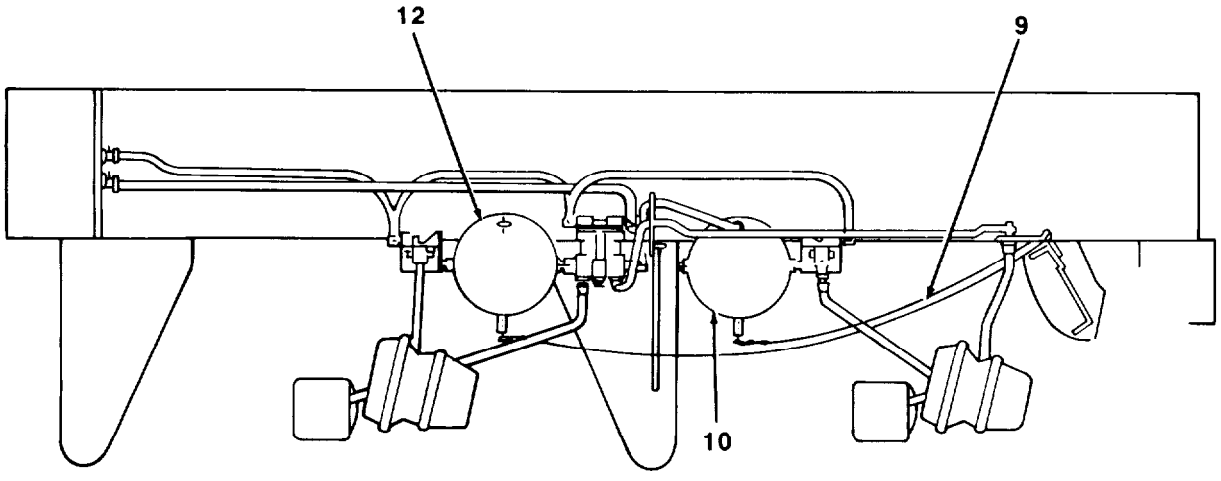
With air system fully pressurized, apply a soap solution to ratio relay valve (3) and check for leaks. No leakage is allowed. if leaks are found, tighten fittings.

c. REMOVAL

NOTE

- **Tag air lines, fittings, and valve ports as they are removed to ensure proper installation.**
- **if disconnecting air lines to remove air reservoir (10 or 12), perform steps 1 through 4.**

(1) Disconnect tractor EMERGENCY and SERVICE air couplings from semitrailer (see paragraph 2-14). Pull on draincock cable (9) and release all air from front and rear air reservoirs (10 and 12).



4-42. RATIO RELAY VALVE MAINTENANCE (Con't).

(2) Disconnect two SERVICE air lines (4) from tee (5).

(3) Disconnect two EMERGENCY air lines (1) from elbows (2).

(4) Disconnect air line (8) from brake chamber (11).

(5) Remove air line (8) from underside of ratio relay valve (3).

(6) Disconnect air line (7) from elbow (6) at underside of ratio relay valve (3).

(7) Remove ratio relay valve (3) from front air reservoir (12). Remove two plugs from underside of ratio relay valve.

(8) Remove three elbows (2 and 6) and tee (5) from ratio relay valve (3).

(9) inspect three elbows (2 and 6) and tee (5) for cracks or damaged threads. if damaged, replace.

d. INSTALLATION

WARNING

Ensure that air lines do not rub against each other or any other surfacewhen installed. Relocate or provide support, as required. if air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

- **Ail male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **install ail air lines and fittings to valve ports as tagged.**
- **if connecting air lines after installing air reservoir (10 or 12), perform steps 3 and 5 through 8.**

(1) install three elbows (2 and 6) and tee (5) to ratio relay valve (3).

(2) install two plugs to underside of ratio relay valve (3). install ratio relay valve to front air reservoir (12).

(3) Connect air line (7) to elbow (6) at underside of ratio relay valve (3).

(4) Connect air line (8) to underside of ratio relay valve (3).

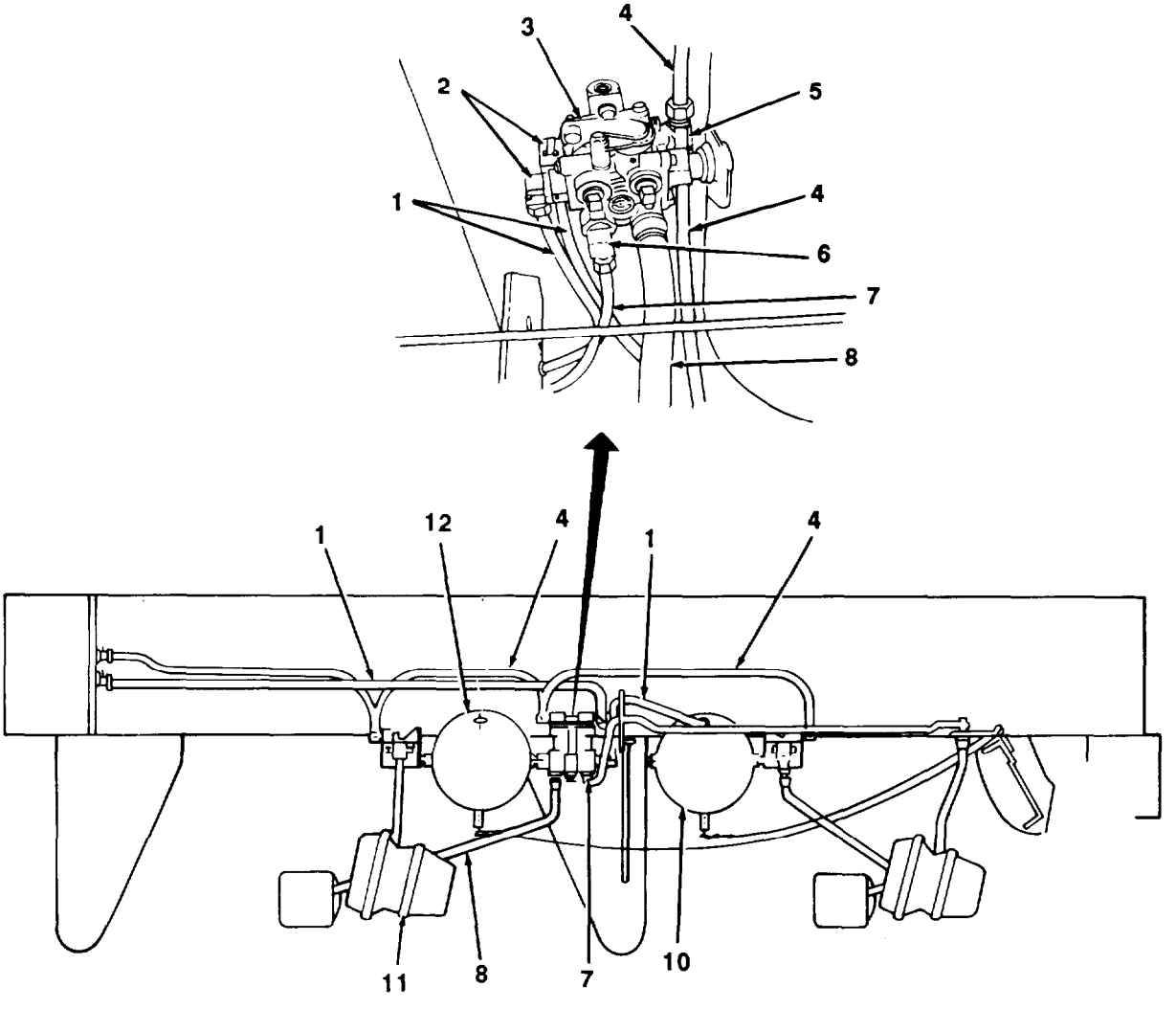
(5) Connect air line (8) to brake chamber (11).

(6) Connect two EMERGENCY air lines (1) to elbows (2).

(7) Connect two SERVICE air lines (4) to tee (5).

(8) Connect tractor EMERGENCY and SERVICE air couplings to semitrailer (see paragraph 2-12). Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-42. RATIO RELAY VALVE MAINTENANCE (Con't).



FOLLOW-ON TASKS:

- Perform OPERATING TEST (this paragraph).
- Perform LEAKAGE TEST (this paragraph).
- Remove and stow chock blocks (see paragraph 2-11).

4-43. AIR RESERVOIR REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-41	Air lines disconnected from relay quick release valve.
4-42	Air lines disconnected from **ratio relay** valve, if removing front air reservoir.

Tools:

- Tool kit, general mechanic's
- Cable cutter

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

Materials/Parts:

- One sleeve
- Four locknuts
- Detergent (Item 9, Appendix E)
- Tag marker (item 21, Appendix E)
- Antiseize tape (item 22, Appendix E)

General Safety instructions:

- Ensure that air lines do not rub against each other or any other surface when installed.

a. REMOVAL

NOTE

Tag all fittings as they are removed to ensure proper installation.

(1) if removing rear air reservoir (3), disconnect EMERGENCY air line (14) from elbow (2) on roadside.

(2) Remove draincock (10) from air reservoir (3 or 13). DO NOT cut draincock cable (9).

(3) Remove four locknuts (6) and screws (1). Lift up on air reservoir (3 or 13) and remove from brackets (5). Remove four shock washers (4). Discard locknuts.

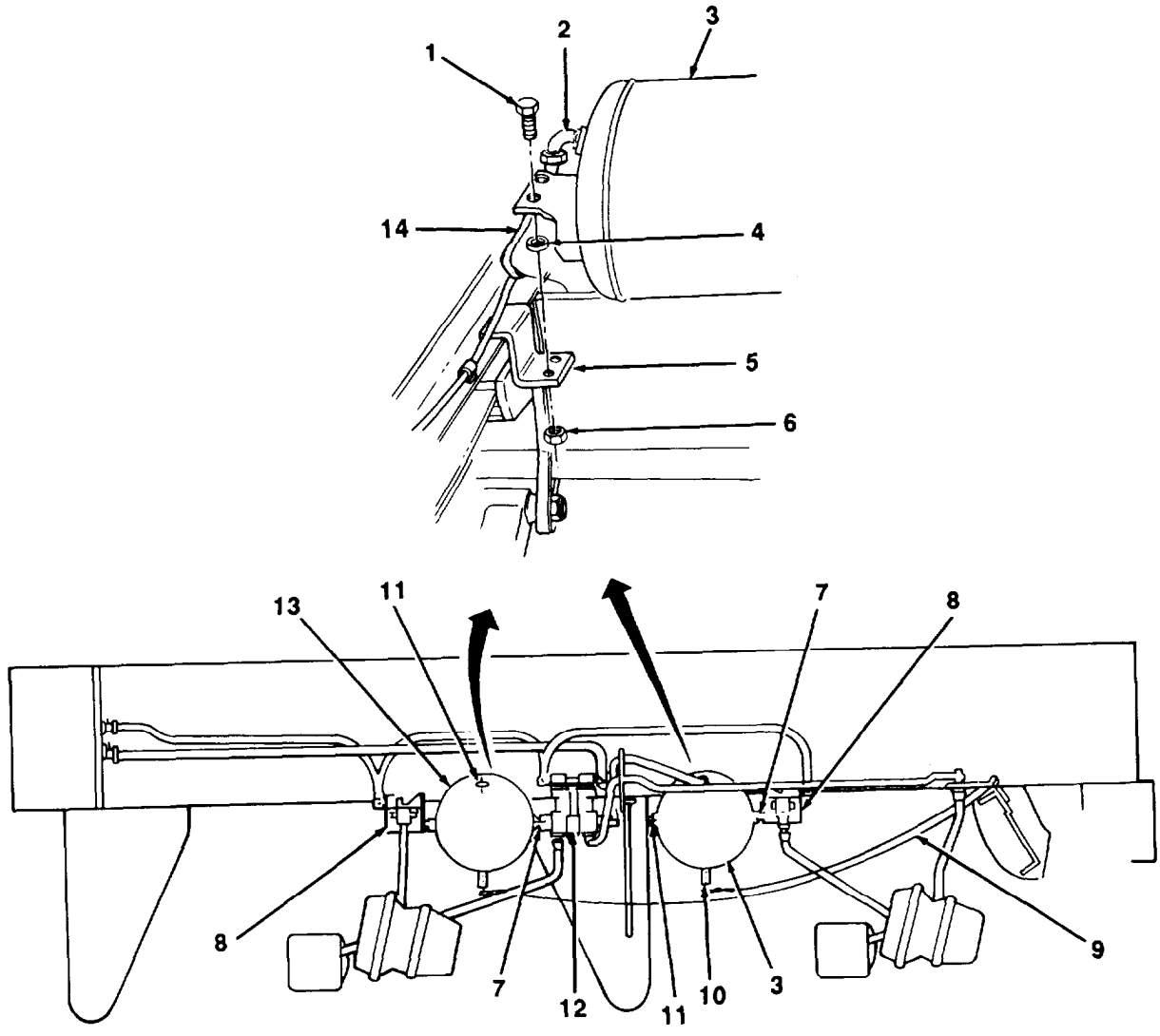
(4) Remove relay quick release valve (8) and ratio relay valve (12), if present, from air reservoir (3 or 13).

(5) From rear air reservoir (3), remove elbow (2), two plugs (11), and nipple (7).

(6) From front air reservoir (13), remove two plugs (11) and two nipples (7).

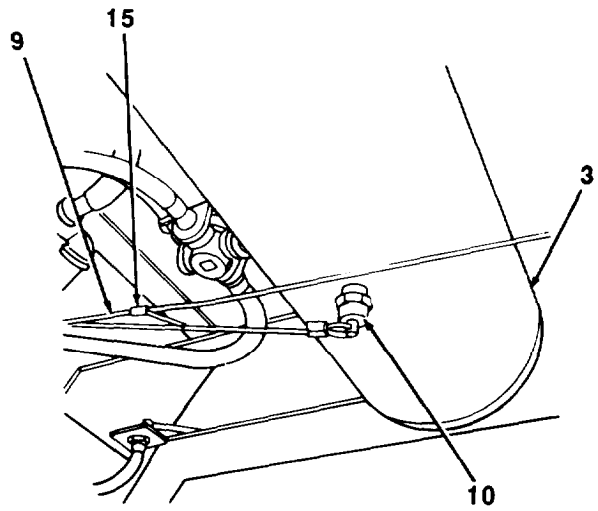
(7) Inspect elbow (2), plugs (11), and nipples (7) for cracks or damaged threads. if damaged, replace.

4-43. AIR RESERVOIR REPLACEMENT (Con't).



4-43. AIR RESERVOIR REPLACEMENT (Con't).

(8) If draincock (10) is damaged, cut draincock cable (9) at sleeve (15). Discard sleeve. Replace draincock.



b. INSTALLATION

WARNING

Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

- **All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **Ensure that all fittings are installed as tagged.**

(1) Install two plugs (11) and two nipples (7) to front air reservoir (13).

(2) Install elbow (2), two plugs (11), and nipple (7) to rear air reservoir (3).

(3) Install relay quick release valve (8) and ratio relay valve (12) to air reservoir (3 or 13).

(4) Place four shock washers (4) on two mounting brackets (5). Position air reservoir (3 or 13) with shock washers between air reservoir and mounting brackets and bolt holes alined. Install four screws (1) and new locknuts (6). Tighten locknuts so that shock washers are compressed to a thickness of ¼ in. (6.4 mm) ± 1/16 in. (1.59 mm).

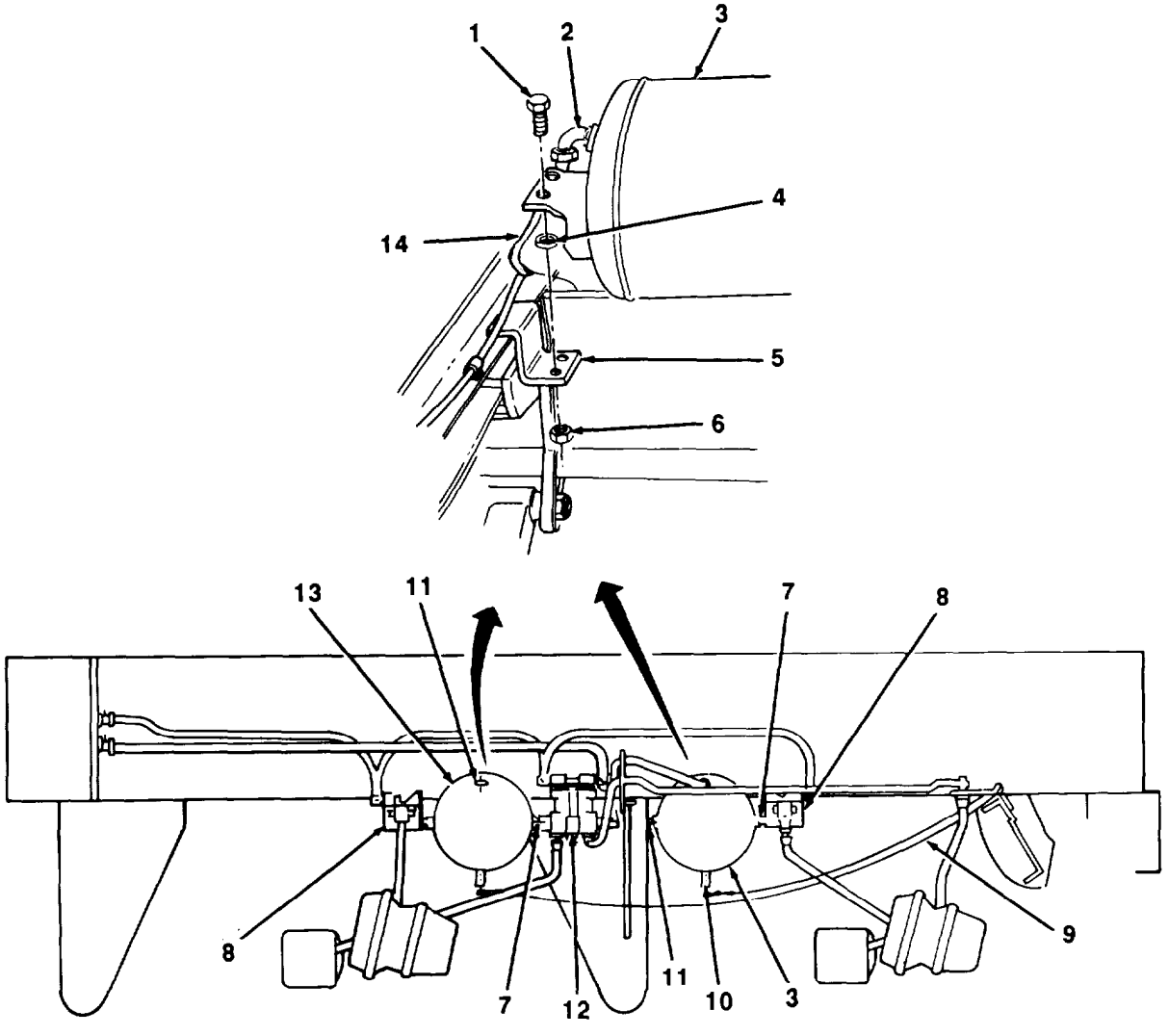
(5) Install draincock (10) to air reservoir (3 or 13).

(6) If draincock (10) was replaced, pass one draincock cable (9) through loop at bumper.

(7) Connect draincock cable (9) to other cable with new sleeve (15). Crimp sleeve with vise grips. Cut excess length of cable.

(8) If installing rear air reservoir (3), connect EMERGENCY air line (14) to elbow (2) at roadside.

4-43. AIR RESERVOIR REPLACEMENT (Con't).



(9) Connect air lines to relay quick release valve (see paragraph 4-41).

(10) Connect air lines to ratio relay valve, if front air reservoir was removed (see paragraph 4-42).

(11) Couple semitrailer to tractor (see paragraph 2-12).

(12) Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-284-10).

(13) Apply a soap solution to check for leaks at all air reservoir fittings and air lines.

4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE.

THIS TASK COVERS

a. Operating Test
b. Leakage Test
c. Removal of Brake Interlock Valve and Angle Bracket
d. installation of Brake Interlock Valve and Angle Bracket
e. Removal of Inversion Valve
f. Installation of Inversion Valve
g. Removal of Relay Quick Release Valve
h. Installation of Relay Quick Release Valve
i. Removal of Shuttle Valve
j. Installation of Shuttle Valve

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Face shield
- Safety goggles

Personnel Required: Two

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

Materials/Parts:

- Three locknuts
- Detergent (Item 9, Appendix E)
- Tag marker (Item 21, Appendix E)
- Antiseize tape (Item 22, Appendix E)

General Safety Instructions:

- Wear safety goggles and face shield when performing leakage tests on brake interlock valves.
- Ensure that air lines do not rub against each other or any other surface when installed.

a. OPERATING TEST

(1) If disconnected, connect tractor EMERGENCY and SERVICE air couplings to semitrailer (see paragraph 2-12). Fully pressurize semitrailer air system (see TM 9-2320-273-10 or TM 9-2320-283-10).

(2) Push in on paddle (12) of brake interlock valve (4) at front port (13). Listen for sound of air exhausting through exhaust port on underside relay quick release valve (1).

(3) Repeat step 2 to check operation of brake interlock valve (4) at rear inlet (10).

b. LEAKAGE TEST

WARNING

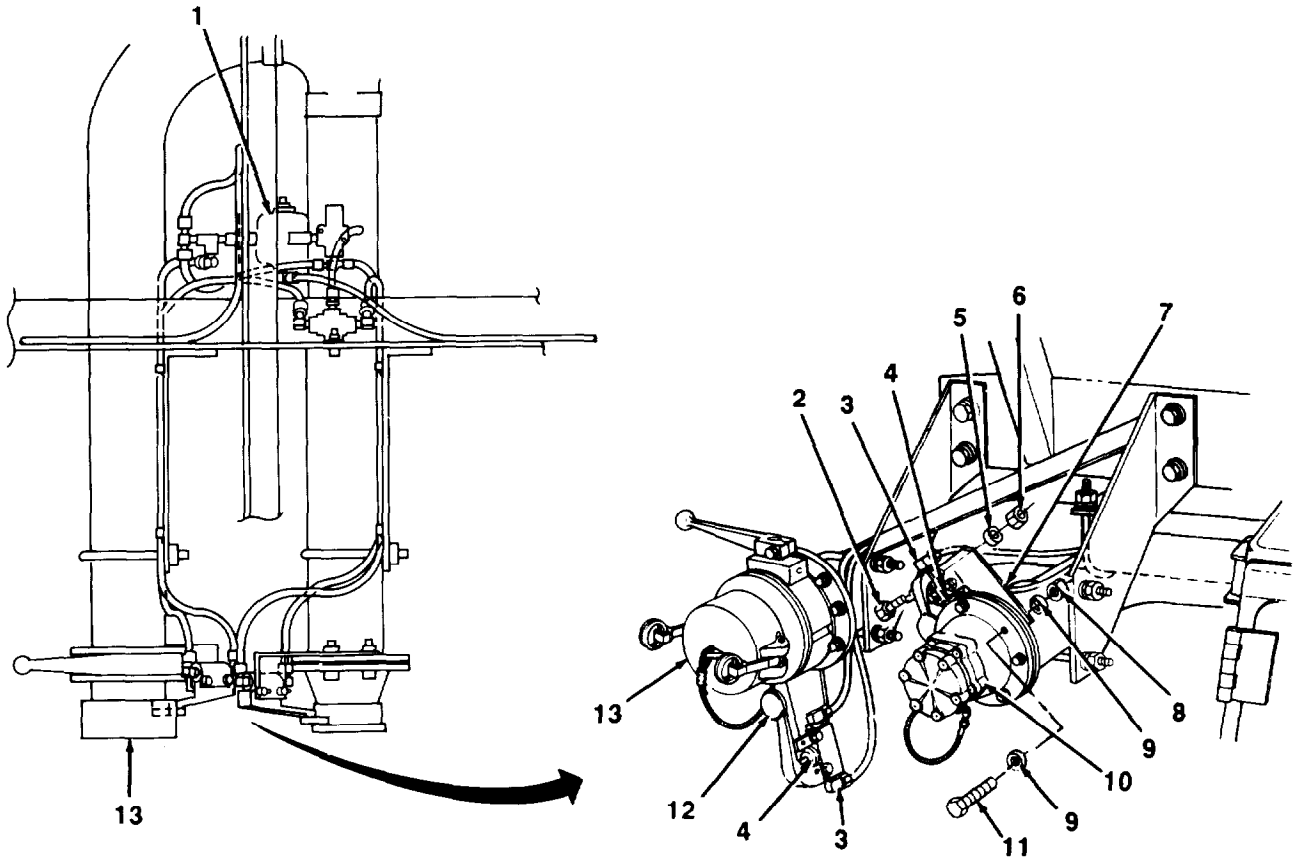
Wear safety goggles and face shield when performing leakage tests on brake interlock valves. Failure to follow this warning may result in serious eye injury due to high pressure air.

(1) With semitrailer still coupled to tractor and with air system fully pressurized, apply a soap solution to all brake interlock lines, fittings, and valves. There should be no leakage.

(2) Push in on paddle (12) of brake interlock valve (4) at front port (13). Observe exhaust port on underside of relay quick release valve (1). Air should exhaust for a period of approximately two seconds. After two seconds, there should be no leakage.

(3) Repeat step 2 to check for leakage while operating brake interlock valve (4) at rear inlet (10).

4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE (Con't).



c. REMOVAL OF BRAKE INTERLOCK VALVE AND ANGLE BRACKET

NOTE

- **Brake interlock valve (4) and angle bracket (7) at front port (13) and rear inlet (10) are removed the same.**
- **Tag air lines for installation.**

(1) Disconnect air lines from brake interlock valve (4) (see paragraph 4-39).

(2) Remove two locknuts (6), washers (5), and screws (2). Remove brake interlock valve (4) from angle bracket (7). Remove two elbows (3) from brake interlock valve. Discard locknuts.

(3) If damaged, remove two nuts (8), screws (11), and four washers (9). Remove angle bracket (7).

4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE (Con't).

d. INSTALLATION OF BRAKE INTERLOCK VALVE AND ANGLE BRACKET

WARNING

Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

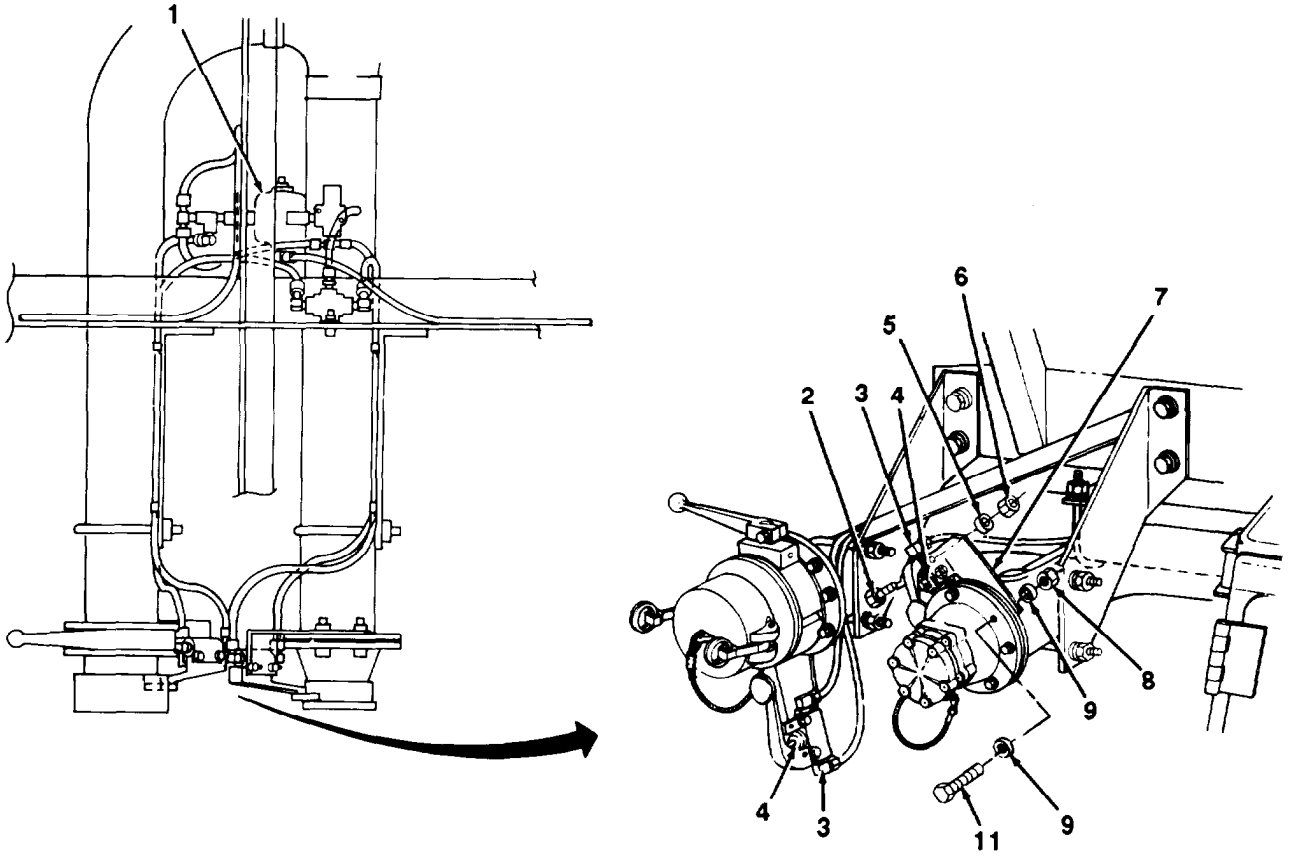
All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) If removed, install angle bracket (7) with two screws (11), four washers (9), and two nuts (8).

(2) Install two elbows (3) to brake interlock valve (4). Install brake interlock valve to angle bracket (7) with two screws (2), washers (5), and new locknuts (6).

(3) Connect air lines to brake interlock valve (4) (see paragraph 4-39).

(4) Perform LEAKAGE TEST (subparagraph b).



4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE (Con't).

e. REMOVAL OF INVERSION VALVE

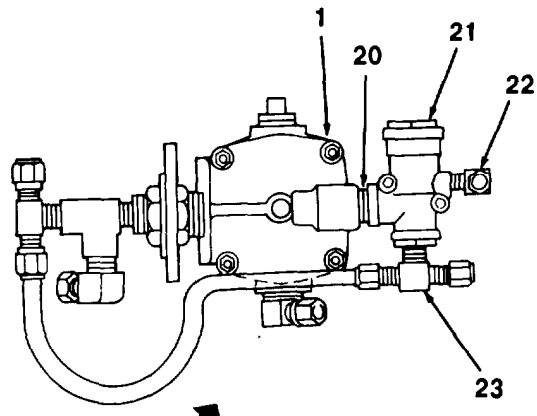
NOTE

Tag air lines for installation.

(1) Disconnect air lines from inversion valve (21) (see paragraph 4-39).

(2) Remove inversion valve (21) from relay quick release valve (1).

(3) Remove nipple (20), elbow (22), and tee (23) from inversion valve (21).



f. INSTALLATION OF INVERSION VALVE

WARNING

Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting In brake lockup and possible serious injury or death to personnel.

NOTE

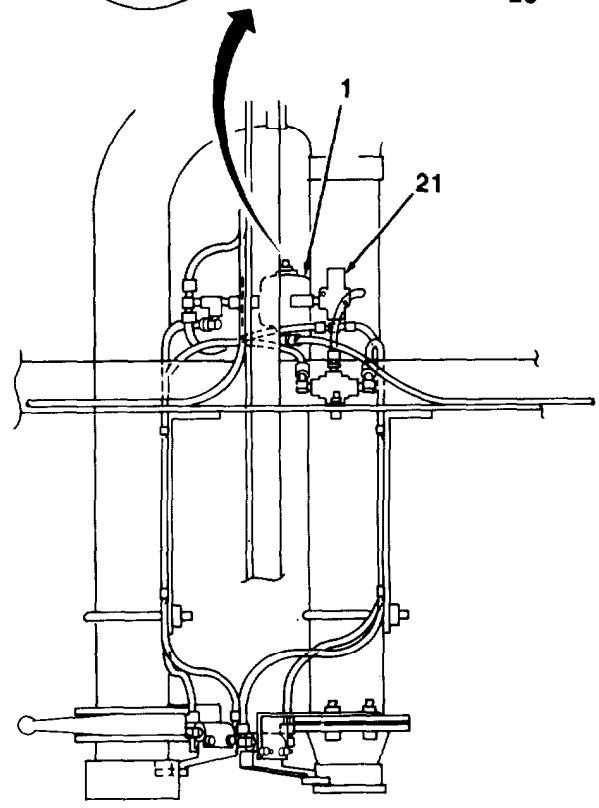
All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Install nipple (20), elbow (22), and tee (23) to inversion valve (21).

(2) Install inversion valve (21) to relay quick release valve (1).

(3) Connect air lines to inversion valve (21) (see paragraph 4-39).

(4) Perform LEAKAGE TEST (subparagraph b).



4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE (Con't).

g. REMOVAL OF RELAY QUICK RELEASE VALVE

NOTE

Tag air lines for installation.

(1) Disconnect air lines from inversion valve (21), relay quick release valve (1), tee (14), and elbow (25) (see paragraph 4-39).

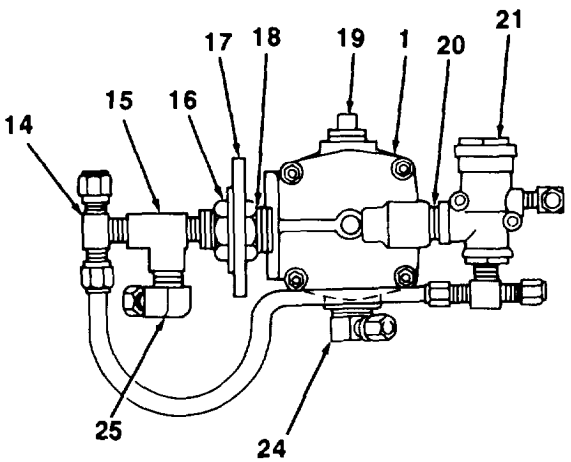
(2) Remove inversion valve (21) and nipple (20) from relay quick release valve (1).

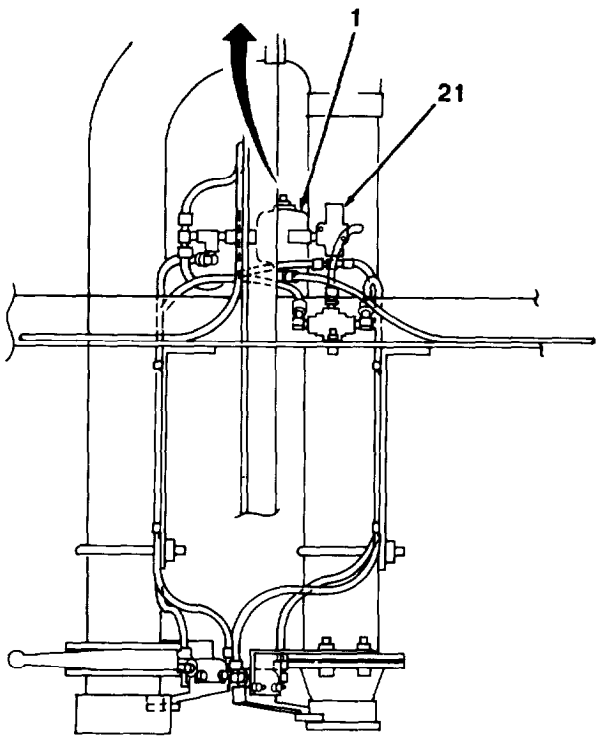
(3) Remove tee (14), tee (15), and elbow (25).

(4) Remove nut (16) and starwasher from terminal stud (18). Remove relay quick release valve (1) and terminal stud from support bar (17).

(5) Separate relay quick release valve (1) from terminal stud (18).

(6) Remove elbow (24) and plug (19) from relay quick release valve (1).





h. INSTALLATION OF RELAY QUICK RELEASE VALVE

WARNING

Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Install elbow (24) and plug (19) to relay quick release valve (1).

(2) Install terminal stud (18) to relay quick release valve (1).

(3) Install terminal stud (18) to support bar (17) with starwasher and nut (16).

4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE (Con't).

(4) Install tee (15), tee (14), and elbow (25).

(5) Install nipple (20) and inversion valve (21) to relay quick release valve (1).

(6) Connect air lines to inversion valve (21), relay quick release valve (l), tee (14), and elbow (25) (see paragraph 4-39).

(7) Perform LEAKAGE TEST (subparagraph b).

i. REMOVAL OF SHUTTLE VALVE

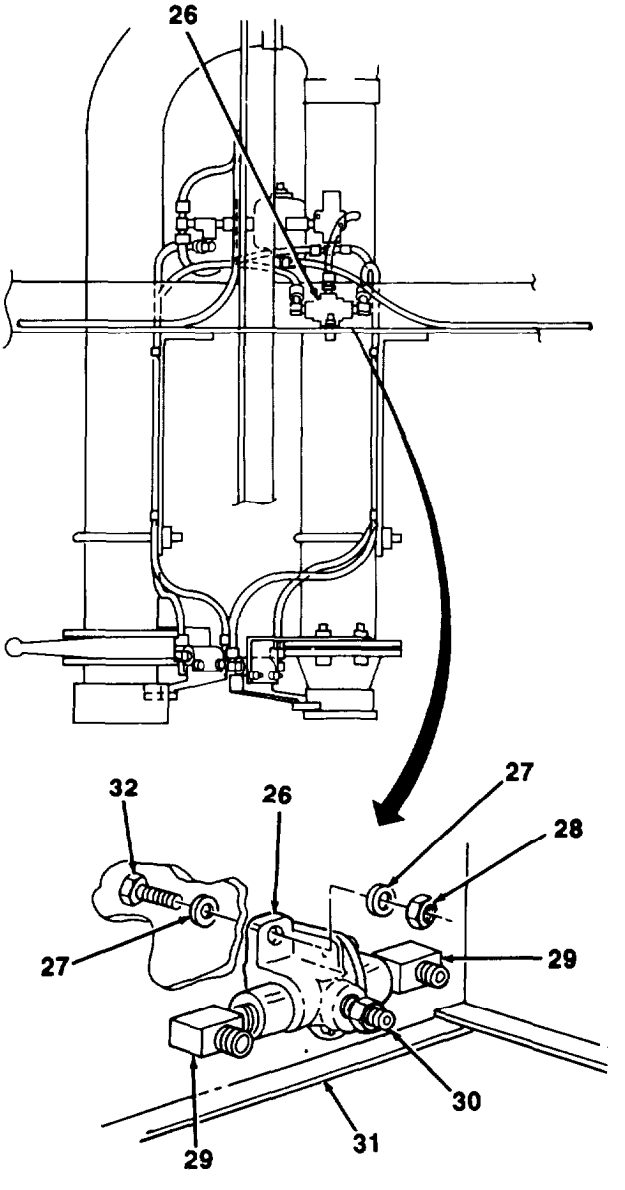
NOTE

Tag air lines for installation.

(1) Disconnect air lines from shuttle valve (26) (see paragraph 4-39).

(2) Remove locknut (28), screw (32), and two washers (27). Remove shuttle valve (26) from frame (31). Discard locknut.

(3) Remove two elbows (29) and straight adapter (30) from shuttle valve (26).



4-44. BRAKE INTERLOCK VALVES AND FITTINGS MAINTENANCE (Con't).

j. INSTALLATION OF SHUTTLE VALVE

WARNING

Ensure that air lines do not rub against each other or any other surface when installed. Relocate or provide support, as required. If air lines rub, a leak may develop, resulting in brake lockup and possible serious injury or death to personnel.

NOTE

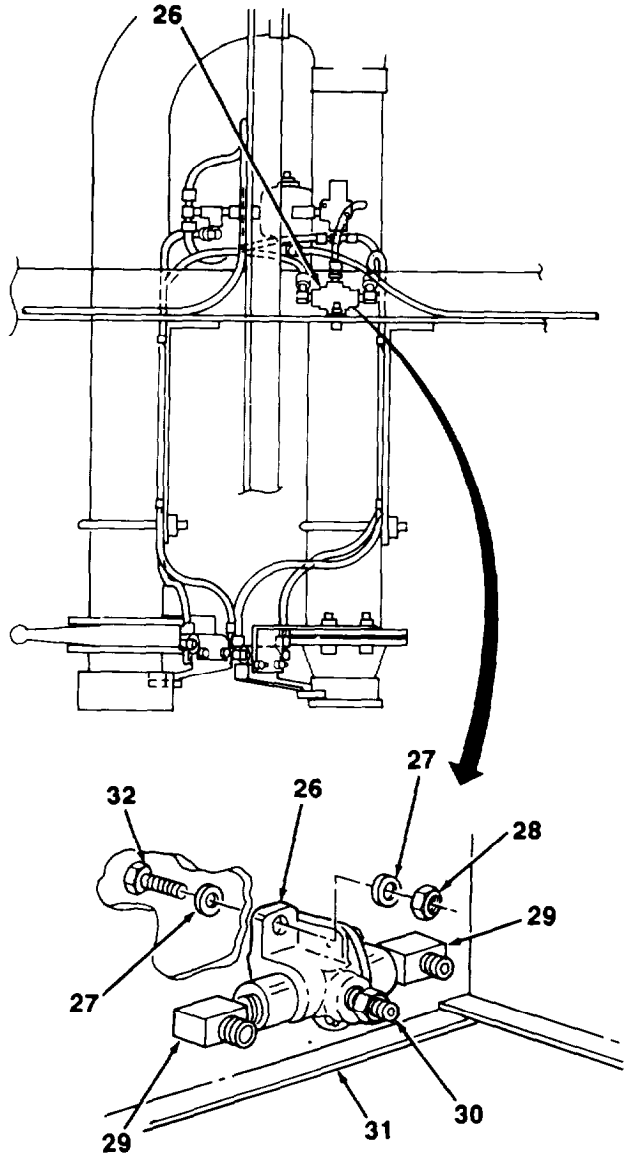
All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Install two elbows (29) and straight adapter (30) to shuttle valve (26).

(2) Install shuttle valve (26) to frame (31) with screw (32), two washers (27), and new locknut (28).

(3) Connect air lines to shuttle valve (26) (see paragraph 4-39).

(4) Perform LEAKAGE TEST (subparagraph b).



Section VIII. WHEELS AND HUBS MAINTENANCE

Paragraph Number	Title	Page Number
4-45	Changing Tires	4-141
4-46	Wheel, Drum, and Wheel Bearing Maintenance	4-147
4-47	Wheel Bearing Check and Adjustment	4-152
4-40	Rim Alinement	4-154
4-49	Tire Maintenance	4-156

4-45. CHANGING TIRES.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
(TM 9-2320-273-10 or TM 9-2320-283-10)	Semitrailer parking/ emergency brakes set.
2-11	Wheels chocked.

References:

- TM 9-2320-273-10 or
- TM 9-2320-283-10

Tools:

- Floor jack or tractor jack (see TM 9-2320-273-10 or TM 9-2320-283-10)
- Semitrailer jacking block
- Lug wrench
- Torque wrench

General Safety Instructions:

- Use extreme caution during removal of spare tire from spare tire carrier.
- DO NOT remove wheel nuts unless all rim clamps are loose.

4-45. CHANGING TIRES (Con't).

a. REMOVAL

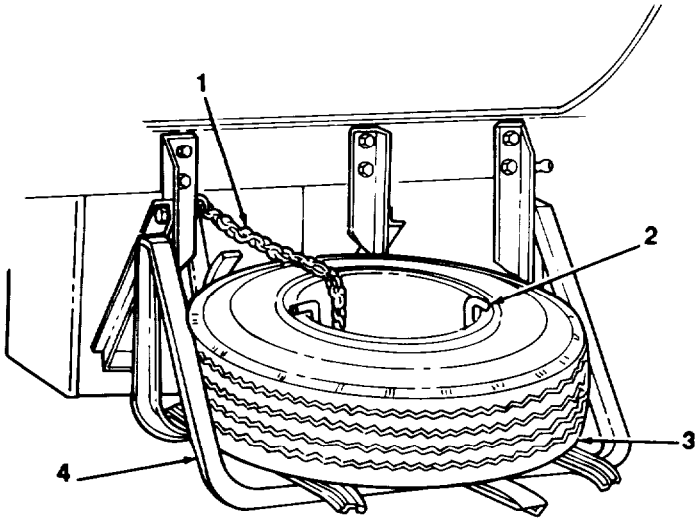
WARNING

Use extreme caution during removal of spare tire (3) from spare tire carrier (4). Spare tire is heavy. Dropping it could cause serious injury to personnel.

NOTE

If semitrailer is coupled to tractor, wheels may be locked by disconnecting EMERGENCY air coupling.

(1) Disconnect chain (1). Loosen two wing nuts and free hook bolts (2) from rim of spare tire (3). Remove spare tire from spare tire carrier (4).

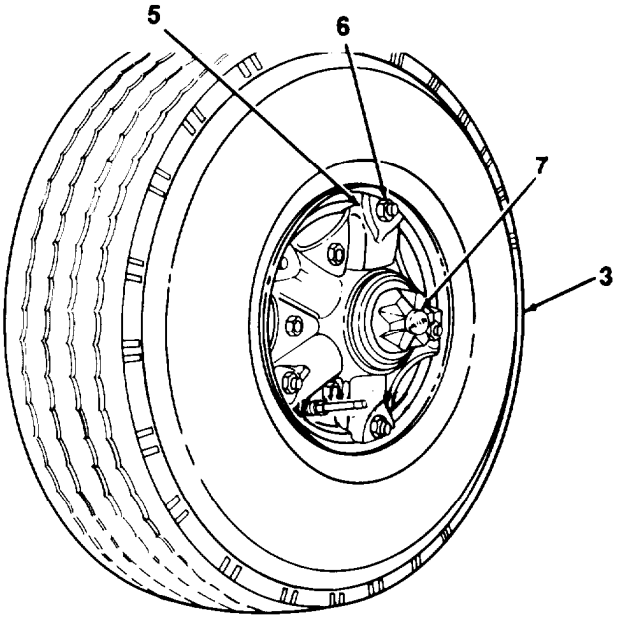


4-45. CHANGING TIRES (Con't).

CAUTION

Use caution not to damage plastic hubcap (7) when changing tire. If hubcap is cracked, lubricating oil will leak from axle.

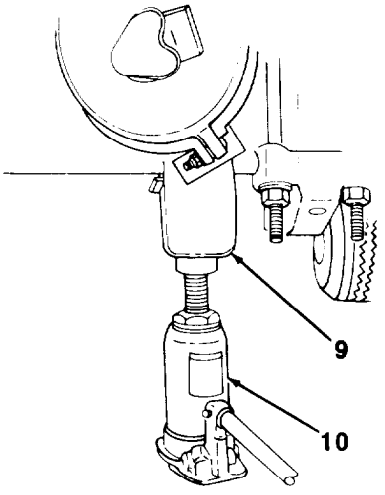
(2) Loosen five wheel nuts (6) until flush with ends of wheel studs.



NOTE

If tire is being changed on the road, jacking block (9) and tractor jack (10) must be used. If tire is being changed at maintenance facility, a floor jack may be used.

(3) Remove jacking block (9) from cabinet. Place jacking block on tractor jack (10) and position under axle in front of brake chamber. Raise semitrailer until affected dual wheel is clear of ground.



WARNING

DO NOT remove wheel nuts (6) unless all rim clamps (5) are loose. Removing wheels nuts with rim clamps still tight may cause rim clamps to fly off, causing serious injury to personnel.

(4) Tap on five rim clamps (5) to loosen. Remove five wheel nuts (6) and rim clamps. Remove outer tire (3).

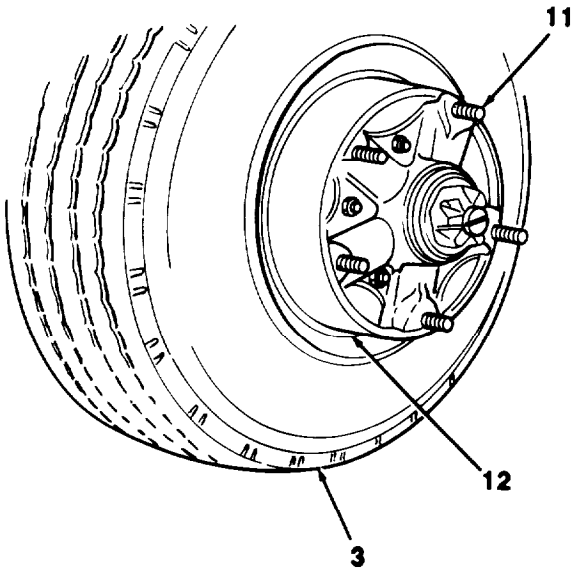
4-45. CHANGING TIRES (Con't).

NOTE

Spacer (12) and inner tire (3) must be worked loose evenly so that they do not become jammed.

(5) If removing inner tire (3), remove spacer (12).

(6) Remove inner tire (3).

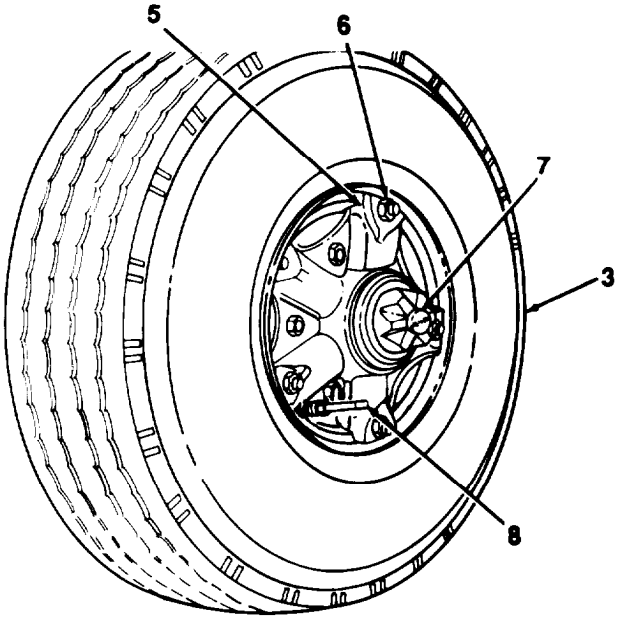


b. INSTALLATION

CAUTION

- **Use caution not to damage plastic hubcap (7) when changing tire (3). If hubcap is cracked, lubricating oil will leak from axle.**
- **When installing tires (3) on wheel, tires should be rotated so that valve stem passes between wheel spokes. Failure to follow this procedure may result in damage to valve stem.**

(1) Remove any foreign matter from mounting faces of wheel and tire rims. Use a wire brush if necessary. Inspect wheel stud (11) threads, wheel nuts (6), and spacer (12) for damage. If wheels nuts or spacer are damaged, replace. If wheel studs are damaged. replace (see paragraph 4-46).



4-45. CHANGING TIRES (Con't).

NOTE

Inner tire (3) and spacer (12) must be worked evenly so that they do not become jammed.

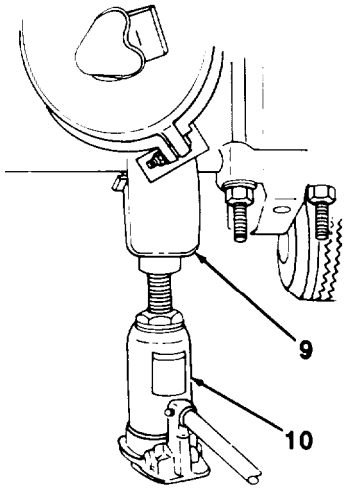
(2) If removed, install inner tire (3) with rim mounting flange side facing out.

(3) Install spacer (12) on wheel.

(4) Install outer tire (3) with rim mounting flange side facing in and with valve stem (8) positioned as close to 180 degrees away from inner tire valve stem as possible.

(5) Install five rim clamps (5) and wheel nuts (6). Tighten wheel nuts in crisscross pattern shown.

(6) Lower semitrailer to ground. Remove jacking block (9) from tractor jack (10) and stow in cabinet. Stow tractor jack in tractor.

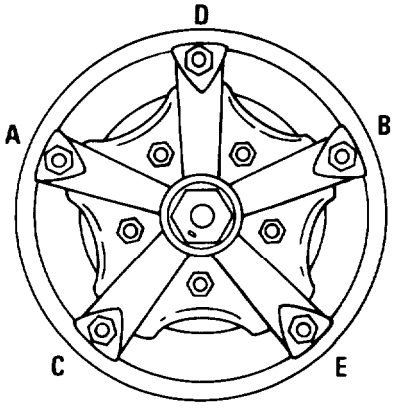


CAUTION

It is important that torque of wheel nuts (6) and rim alinement be checked. Insufficient torque can cause rim slippage, resulting in broken valve stems, worn parts, and damaged tires. Excessive torque can cause damage by stripping wheel studs, collapsing a spacer, or forcing rims into an out-of-round condition. Improper rim alinement will cause tires to wobble and wear unevenly.

(7) Torque wheel nuts (6) in crisscross pattern shown to 250 lb.-ft. (339 N•m).

(8) Check rim alinement (see paragraph 4-48).



4-45. CHANGING TIRES (Con't).

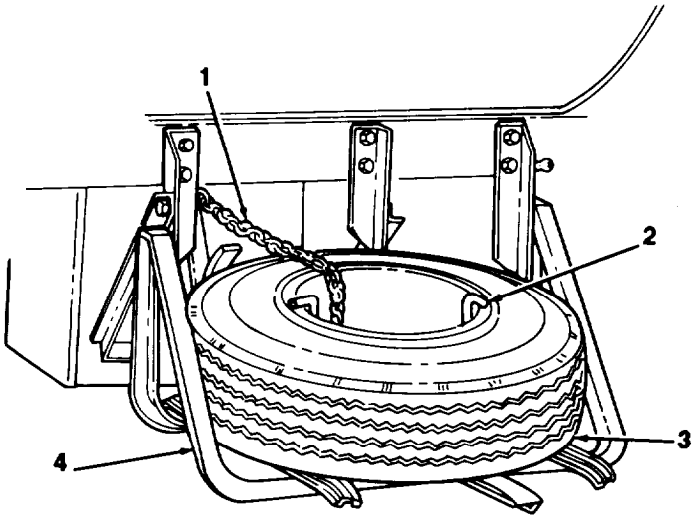
WARNING

Use extreme caution during installation of spare tire (3) to spare tire carrier (4). Spare tire is heavy. Dropping it could cause serious injury to personnel.

NOTE

If tire (3) was changed on road and replacement spare tire is not immediately available, be sure to replace and mount one on semitrailer as soon as possible.

(9) Place replacement spare tire (3) in spare tire carrier (4). Hook two hook bolts (2) over rim and tighten wing nuts securely. Connect chain (1).



FOLLOW-ON TASKS:

- Remove and stow chock blocks (see paragraph 2-11).
- Release semitrailer parking/emergency brakes (see TM 9-2320-273-10 or TM 9-2320-283-10).

4-46. WHEEL, DRUM, AND WHEEL BEARING MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Cleaning and inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-34	Brakes adjusted.
4-45	Tires removed.

Tools:

- Tool kit, general mechanic's
- Drain pan
- Torque wrench
- 4% in. wheel bearing adjusting nut wrench, 8 pt.
- 4⅞ in. wheel bearing adjusting nut wrench, 6 pt.

Personnel Required: Two

References:

- TM 9-214

Materials/Parts:

- One cotter pin
- One oil seal
- One performed packing
- Five locknuts
- Abrasive cloth (item 5, Appendix E)
- Dry cleaning solvent (item 10, Appendix E)
- Lubricating oil (Item 15, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- If any wheel stud is damaged and needs replacement, all wheel studs MUST be replaced.
- Wheel and drum assembly is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal and installation.

4-46. WHEEL, DRUM, AND WHEEL BEARING MAINTENANCE (Con't).

a. REMOVAL

(1) Place a suitable container under hubcap (10). Remove hubcap and allow all lubricating oil to drain. Remove preformed packing (9) from hubcap and discard.

(2) Cage brake chamber spring (see paragraph 4-33).

(3) Remove cotter pin (8) from axle nut (7). Remove axle nut and washer (6). Discard cotter pin.

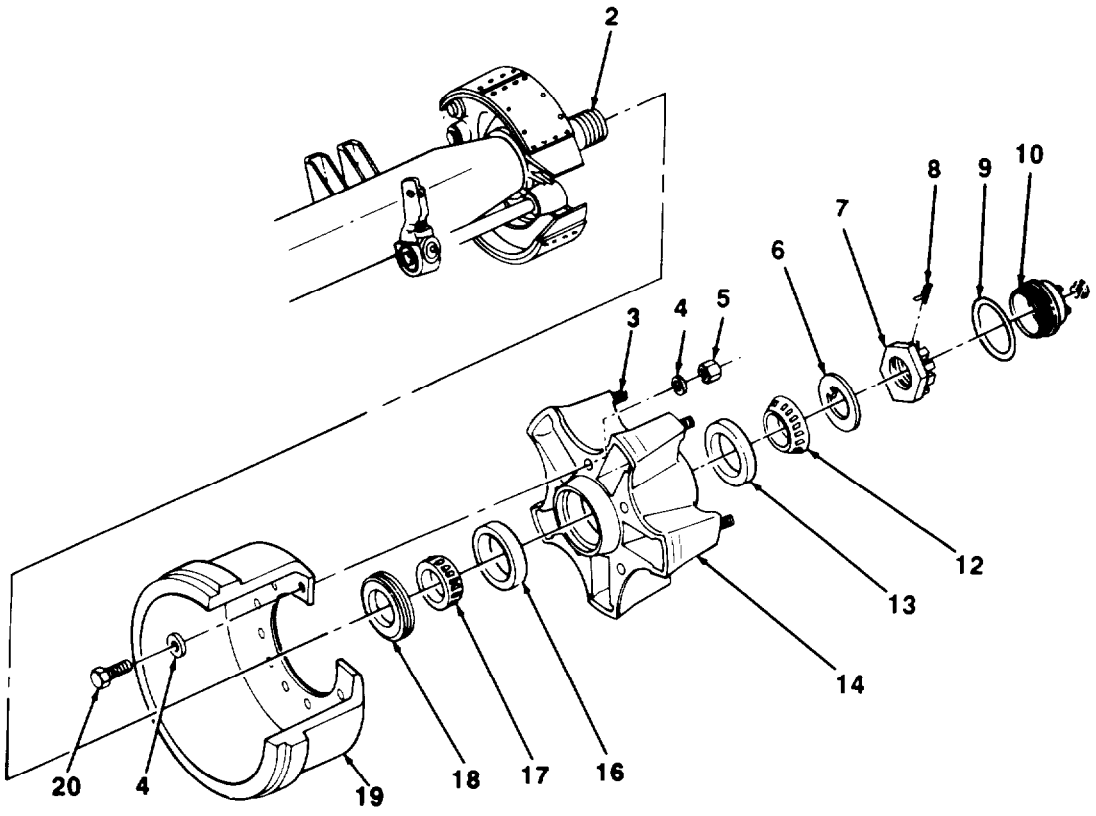
WARNING

Wheel and drum assembly is heavy and awkward to handle. Use caution provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel.

NOTE

Ensure that wheel bearings and bearing cups are tagged as they are removed. DO NOT mix.

(4) Provide suitable support for wheel (14) and drum (19) assembly. Pull outward on wheel and drum assembly and remove outer wheel bearing (12) as it becomes loosened. Remove wheel and drum assembly from axle spindle (2).



4-46. WHEEL, DRUM, AND WHEEL BEARING MAINTENANCE (Con't).

(5) Working from wheel (14) end, drive out inner wheel bearing (17) and oil seal (18). Remove inner bearing cup (16) from wheel side. Remove outer bearing cup (13) from drum (19) side. Discard oil seal.

CAUTION

DO NOT damage axle with chisel.

(6) If metal wiper of oil seal (18) has remained pressed onto spindle (2), use a chisel to split it, then remove from spindle.

(7) To separate wheel (14) from drum (19), remove five locknuts (5), bolts (20), and ten washers (4). Discard locknuts.

b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(1) Clean and inspect outer and inner wheel bearings and bearing cups in accordance with TM 9-214. If any wheel bearing or bearing cup needs replacing, replace all wheel bearings and bearings cups.

(2) Clean ail removed components, axle spindle shoulder, and wheel hub with dry cleaning solvent. Remove any burrs with abrasive cloth and wipe clean with dry cleaning solvent.

(3) Inspect drum for cracks, scoring, pitting, or grooves. Check edge of drum for cracks or broken areas. If drum is damaged, notify direct support maintenance.

(4) Inspect wheel for cracks or other damage. If damaged, replace wheel.

WARNING

If any wheel stud (3) is damaged and needs replacement, all wheel studs must be replaced. Replacing only the damaged wheel stud and remounting the wheel may result in further damage and injury to personnel.

(5) inspect wheel studs (3) for damage. If damaged, remove all five wheel studs. Install five new wheel studs.

(6) Inspect all remaining removed components for damage. Replace if damaged.

4-46. WHEEL, DRUM, AND WHEEL BEARING MAINTENANCE (Con't).

c. INSTALLATION

NOTE

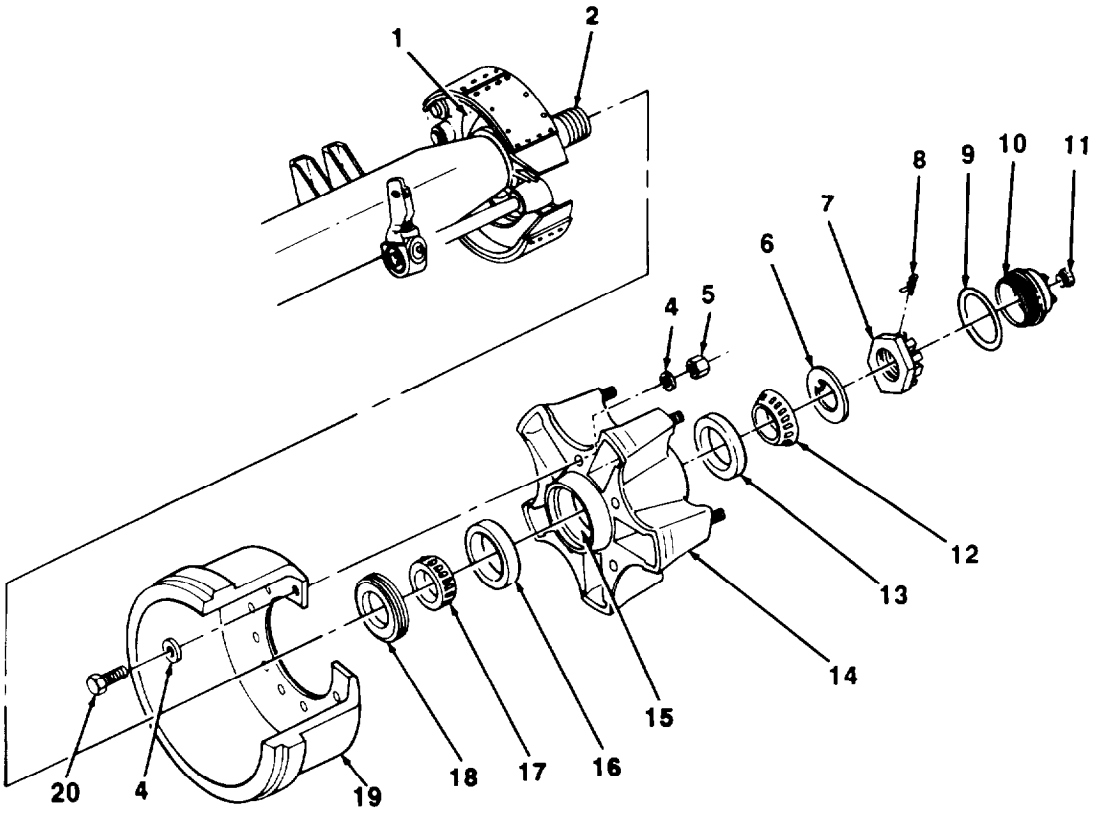
- **Ensure that wheel bearings are lightly coated with lubricating oil as they are installed.**
- **Install wheel bearings and bearing cups as tagged.**

(1) Install outer and inner bearing cups (13 and 16) inside wheel hub (15) until flush against wheel hub shoulders.

(2) Lubricate spindle (2) with lubricating oil. Install new oil seal (18) with metal wiper facing spider (1) side.

(3) Install inner wheel bearing (17) over spindle (2) until flush against oil seal (18).

(4) If separated, install wheel (14) to drum (19) with five bolts (20), ten washers (4), and five new locknuts (5). Torque locknuts to 250 lb.-ft. (339 N•m).



4-46. WHEEL, DRUM, AND WHEEL BEARING MAINTENANCE (Con't).

WARNING

Wheel and drum assembly is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during installation. Failure to follow this warning may result in serious injury to personnel.

(5) Using a suitable support, install wheel (14) and drum (19) assembly over axle spindle (2).

(6) Install outer wheel bearing (12).

(7) Install washer (6) and axle nut (7). Torque axle nut to 125 lb.-ft. (170 N•m) while rotating wheel (14) in both directions to properly seat outer and inner wheel bearings (12 and 17).

(8) Back axle nut (7) off ⅛ to ¼ of a turn until first of two holes in axle spindle (2) alines with slot in axle nut. Install new cotter pin (8) and bend back.

(9) Uncage brake chamber spring (see paragraph 4-33).

(10) Lubricate new preformed packing (9) and hubcap (10) threads with lubricating oil. install preformed packing to hubcap. Install hubcap to axle spindle (2) and torque to 70 lb.-ft. (95 N•m).

(11) Remove hubcap plug (11) and add 1½ pt (0.7 l) of lubricating oil. Allow oil to seep through outer and inner wheel bearings (12 and 17) and seek a level even with mark on hubcap (10). DO NOT overfill. Install hubcap plug.

FOLLOW-ON TASKS:

- Install tires (see paragraph 4-45).
- Check for leaks.

4-47. WHEEL BEARING CHECK AND ADJUSTMENT.

THIS TASK COVERS

a. Wheel Bearing Check

b. Wheel Bearing Adjustment

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-34	Brakes adjusted.

Tools:

- Tool kit, general mechanic's
- 4 3/8 in. wheel bearing adjusting nut wrench, 8 pt.
- 4 7/8 in. wheel bearing adjusting nut wrench, 6 pt.
- Drain pan
- Floor jack
- Jackstand
- Pry bar
- Torque wrench

Materials/Parts:

- One cotter pin
- One preformed packing
- Lubricating oil (Item 15, Appendix E)

a. WHEEL BEARING CHECK

(1) Place a suitable floor jack under axle in front of brake chamber and raise wheels clear of ground. Support axle with a suitable jackstand.

(2) Cage brake chamber spring (see paragraph 4-33).

(3) Turn wheels and note whether they turn hard. If wheels turn hard, perform WHEEL BEARING ADJUSTMENT (subparagraph b).

(4) Test for excessive wheel wobble:

(a) Rest one end of pry bar (6) on floor under tire (7) and lift up on tire. Move pry bar up and down while holding one hand against top of outer tire. if wheel bearings are adjusted correctly, movement of wheels will be barely visible and will turn freely with no drag.

(b) If there is excessive wheel wobble, perform WHEEL BEARING ADJUSTMENT (subparagraph b).

b. WHEEL BEARING ADJUSTMENT

(1) Remove jackstand and lower wheels to ground. Loosen hubcap (4) ½ turn. Raise wheels again and support axle with jackstand.

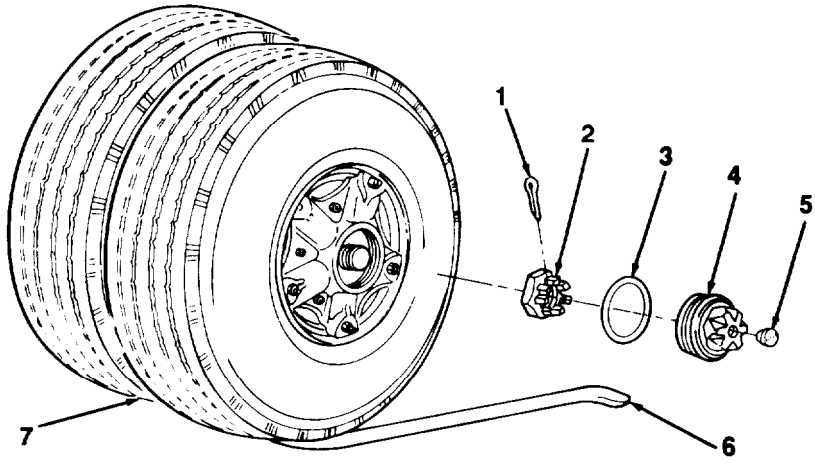
(2) Place a drain pan under hubcap (4). Remove hubcap and allow all lubricating oil to drain. Remove preformed packing (3) from hubcap and discard.

NOTE

General condition of outer wheel bearing may be inspected at this time. if contamination or damage is found, service wheel bearings (see paragraph 4-46).

(3) Remove cotter pin (1) from axle nut (2) and discard.

4-47. WHEEL BEARING CHECK AND ADJUSTMENT (Con't).



NOTE

If wheels still turn hard after axle nut (2) is tightened to 125 lb.-ft. (170 N•m), it will be necessary to check condition of inner wheel bearing (see paragraph 4-46) or recheck brake adjustment (see paragraph 4-34).

(4) Check that axle nut (2) torque is set at 125 lb.-ft. (170 N•m), while rotating wheels in both directions. Back off axle nut 1/6 to ¼ of a turn, until first of two holes in axle spindle alines with slot in axle nut.

(5) Install new cotter pin (1) through axle nut (2). Bend cotter pin back.

(6) Uncage brake chamber spring (see paragraph 4-33).

(7) Lubricate new preformed packing (3) and hubcap threads with lubricating oil. Install preformed packing to hubcap (4). Install hubcap. Remove hubcap plug (5) and add 1½ pt (0.7 l) of lubricating oil. Allow oil to seep through the bearings and seek a level even with mark on hubcap window. DO NOT overfill. Install hubcap plug.

(8) Torque hubcap (4) to 70 lb.-ft. (95 N•m).

FOLLOW-ON TASKS:

Check for leaks.

4-48. RIM ALINEMENT.

THIS TASK COVERS

a. Rim Alinement Check

b. Rim Alinement

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstand
- Lug wrench
- Torque wrench

a. RIM ALINEMENT CHECK

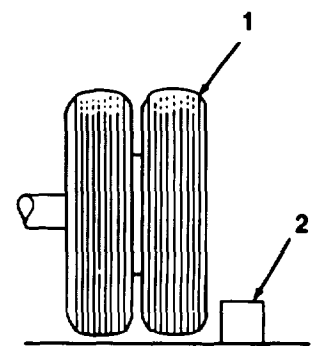
(1) Place a suitable floor jack under axle in front of brake chamber and raise wheels clear of ground. Support axle with a suitable jackstand.

(2) Cage brake chamber spring (see paragraph 4-33).

(3) Place block of wood (2) or other rectangular object on surface beside tire (1). Rotate wheels.

(4) Note variation, if any, in space between block of wood (2) and tire (1) as wheels are rotated. If variation exceeds 3/16 in. (4.8 mm), perform RIM ALINEMENT (subparagraph b).

(5) Remove jackstand and lower axle.



b. RIM ALINEMENT

NOTE

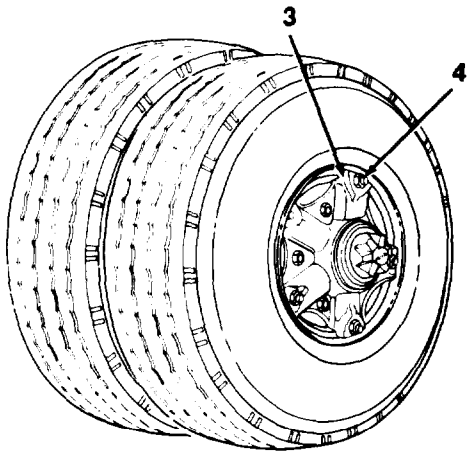
- If rim alinement procedure does not correct misalinement, rim, wheel, or drum may be damaged and must be removed for further inspection (see paragraphs 4-45, 4-46, and 4-49).
- Ensure that rim clamps (3) remain in proper position.
- Optimum wheel nut torque is 250 lb.-ft. (339 N•m).

(1) Loosen wheel nuts (4) where inward deviation is greatest and tighten on opposite side.

4-48. RIM ALINEMENT (Con't).

(2) Repeat RIM ALINEMENT CHECK (subparagraph a).

(3) Torque all wheel nuts (4) to 250 lb.-ft. (339 N•m) (see paragraph 4-45).



FOLLOW-ON TASKS:

- Uncage brake chamber spring (see paragraph 4-33).
- Remove and stow chock blocks (see paragraph 2-11).

4-49. TIRE MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-45 Tire removed.

Tools:

- Tool kit, general mechanic's
- Safety cage

References:

- TM 9-2610-200-24

General Safety Instructions:

- Carefully follow all tire dismounting and mounting instructions.

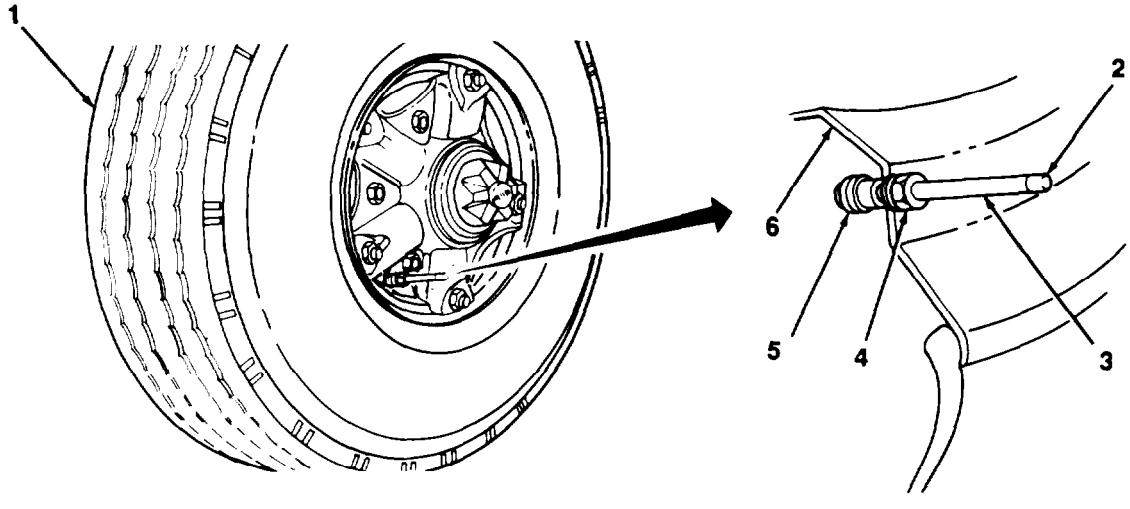
a. REMOVAL

WARNING

Carefully follow all tire dismounting instructions. NEVER dismount a tire unless totally deflated. Failure to follow these instructions may cause serious injury or death to personnel.

(1) Remove valve cap (2) and valve core from valve stem (3). Completely deflate tire (1). Remove tire from rim (6) (see TM 9-2610-200-24).

(2) Remove nut (4) and valve stem (3) from rim (6).



4-49. TIRE MAINTENANCE (Con't).

b. INSPECTION

(1) Inspect tire (1) for cuts, gouges, cracks, and sidewall damage. Check for protruding objects on inside and outside of tire. Repair tire as required (see TM 9-2610-200-24).

(2) Inspect rim (6) for bends or other damage. Replace if bent or damaged.

(3) Inspect valve cap (2), valve core, and valve stem (3) for cracks or other damage. Replace if cracked or damaged.

c. INSTALLATION

(1) Install valve stem (3) through rim (6). Install nut (4) and securely tighten to seat grommet (5) against rim.

WARNING

Carefully follow all tire mounting instructions. NEVER mount or use damaged tires or rims. Failure to follow these instructions may result in faulty positioning of tire and/or rim parts. The assembly could burst with sufficient force to cause serious injury or death to personnel.

(2) Install tire (1) on rim (6). Install valve core in valve stem (3). Using a safety cage, inflate tire to 95 psi (655 kPa). DO NOT over inflate tire. Install valve cap (2). Check for leaks in valve stem area and around edge of rim. Check for proper seat of tire bead to rim (see TM 9-2610-200-24).

FOLLOW-ON TASKS:

Install tire (see paragraph 4-45).

Section IX. FRAME AND TOWING ASSEMBLY MAINTENANCE

Paragraph Number	Title	Page Number
4-50	Lockpin Replacement	4-158
4-51	Pick-up Plate Replacement	4-159
4-52	Landing Gear Replacement	4-161
4-53	Fire Extinguisher Mounting Bracket Maintenance	4-168
4-54	Spare Tire Carrier Replacement	4-170

4-50. LOCKPIN REPLACEMENT.

THIS TASK COVERS

Lockpin Replacement

INITIAL SETUP

Tools:

- Tool kit, general mechanic's
- Wire cutter

Materials/Parts:

- One sleeve

LOCKPIN REPLACEMENT

NOTE

Lockpins used to secure grabhandle or convoy warning light assembly to mounting brackets are replaced the same. This task describes replacement of a grabhandle lockpin.

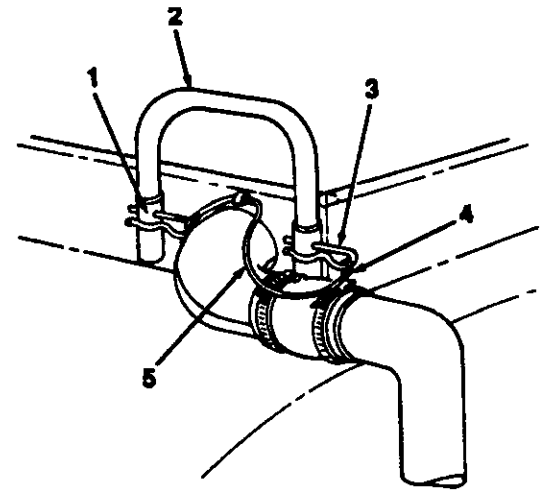
(1) Remove lockpin (3) from grabhandle (2) and mounting bracket (1).

(2) Cut cable (5) from lockpin (3).

(3) Install a new sleeve (4) at end of cable (5) and pass replacement lockpin (3) through loop formed in cable.

(4) Pull loop in cable (5) tight around lockpin (3). Use vise grips to crimp sleeve (4).

(5) Install lockpin (3) through grabhandle (2) and mounting bracket (1).



4-51. PICK-UP PLATE REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning
c . Installation

INITIAL SETUP

Materials/Parts:

- Six locknuts
- Dry cleaning solvent (Item 10, Appendix E)
- Grease (Item 12, Appendix E)
- Mylar tape (Item 24, Appendix E)

Tools:

- Tool kit, general mechanic's
- Torque wrench

Personnel Required: Two

General Safety Instructions:

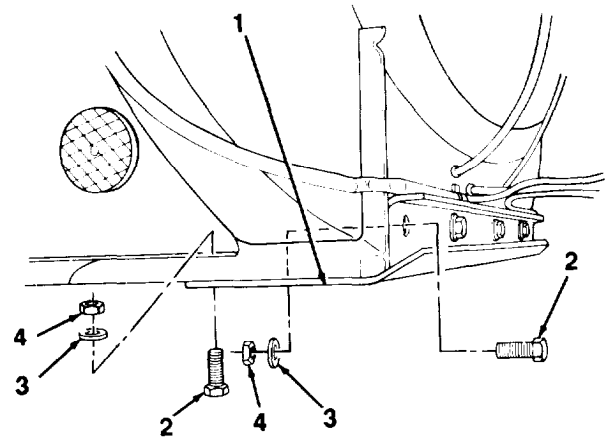
- Pick-up plate is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal and installation.
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. REMOVAL

WARNING

Pick-up plate (1) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel.

Remove six locknuts (4), washers (3), and bolts (2). Remove pick-up plate (1) from front crossmember and siderails. Discard locknuts.



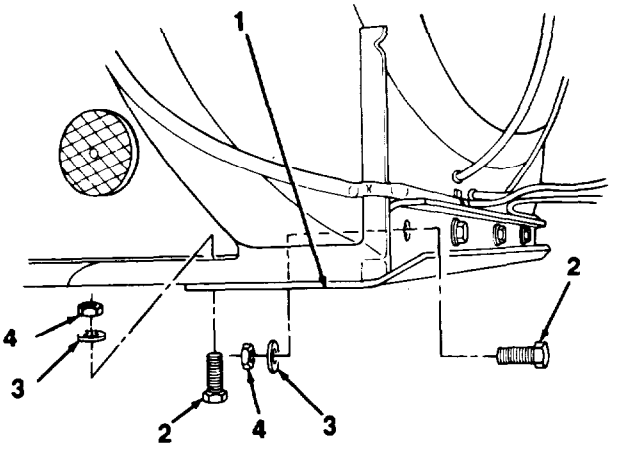
b. CLEANING

(1) Remove all traces of old mylar tape from mounting surfaces of pick-up plate (1) to front crossmember and siderails.

4-51. PICK-UP PLATE REPLACEMENT (Con't).

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.



(2) Use dry cleaning solvent to clean mounting surfaces of pick-up plate (1) to front crossmember and siderails. Allow to dry thoroughly.

c. INSTALLATION

WARNING

Pick-up plate (1) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel.

CAUTION

To protect against corrosion and distortion of components, mylar tape must be applied to mounting surfaces of pick-up plate (1) to front crossmember and siderails.

(1) Apply suitable width of mylar tape to all mounting surfaces of pick-up plate (1) to front crossmember and siderails. Pierce holes in mylar tape at mounting bolt holes to prevent water accumulation.

(2) Install pick-up plate (1) to front crossmember and siderails with six bolts (2), washers (3), and new locknuts (4). Torque locknuts to 120 lb.-ft. (163 N•m). Trim excess mylar tape.

(3) Apply a thick coat of grease to pick-up plate (1) (see Chapter 3, Section I).

4-52. LANDING GEAR REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Condition
2-11 Wheels chocked.
2-12 Semitrailer parked on level ground and coupled to tractor.
- - Landing gear raised.

Tools:

- Tool kit, general mechanic's
- Torque multiplier
- Torque wrench

Personnel Required: Two

Materials/Parts:

- Two retaining rings
- Nine locknuts
- Dry cleaning solvent (Item 10, Appendix E)
- Mylar tape (Item 24, Appendix E)

General Safety Instructions:

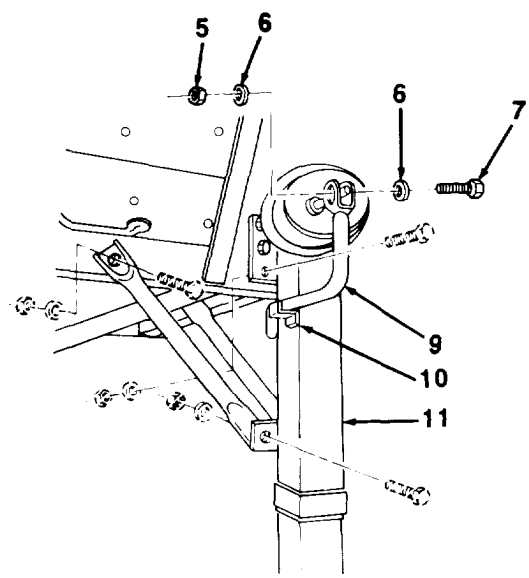
- Landing gear is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal and installation.
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. REMOVAL

NOTE

- **Removal of curbside landing gear leg (11) is described. Roadside landing gear leg is removed the same, except that it has no handcrank (9).**
- **If removing sand shoe, perform step 7.**

(1) Unstow handcrank (9) from clip (10) on landing gear leg (11). Remove locknut (5), two washers (6), and screw (7). Remove handcrank. Discard locknut.

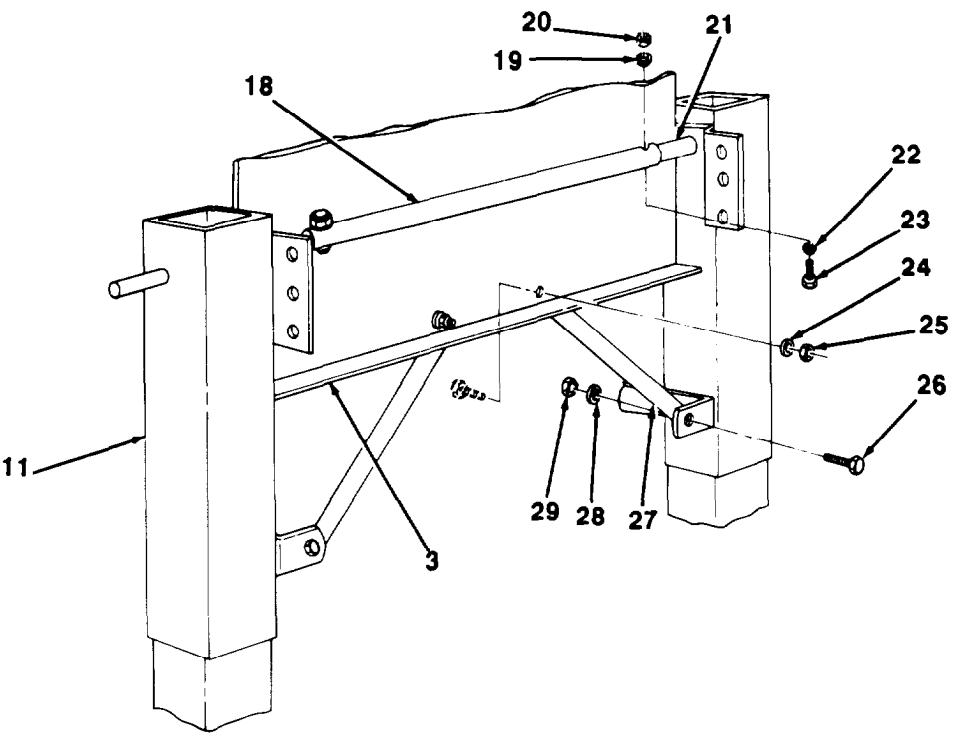


4-52. LANDING GEAR REPLACEMENT (Con't).

(2) Remove nut (20), two washers (19 and 22), and bolt (23) securing cross-shaft (18) to landing gear mainshaft (21).

(3) If cross-shaft (18) is damaged, remove from other side mainshaft (21) in same manner.

(4) Remove locknut (29), washer (28), and bolt (26) securing transverse brace (27) to landing gear leg (11). Discard locknut. Loosen locknut (25) securing transverse brace to frame (3) and move brace clear of landing gear leg.



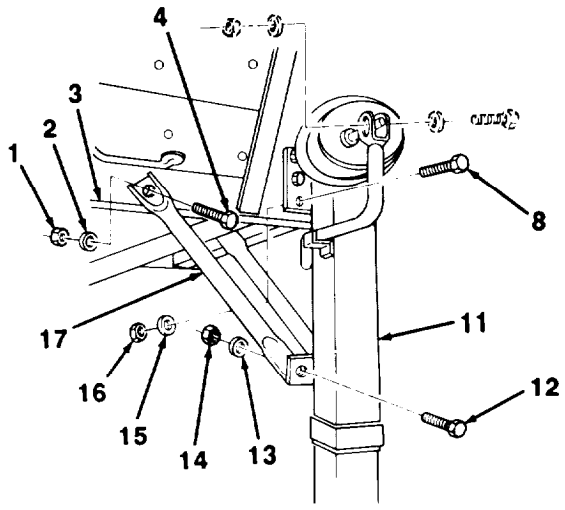
(5) Remove locknut (14), washer (13), and bolt (12) securing longitudinal brace (17) to landing gear leg (11). Discard locknut. Loosen locknut (1) securing longitudinal brace to frame (3) and move brace clear of landing gear leg.

4-52. LANDING GEAR REPLACEMENT (Con't).

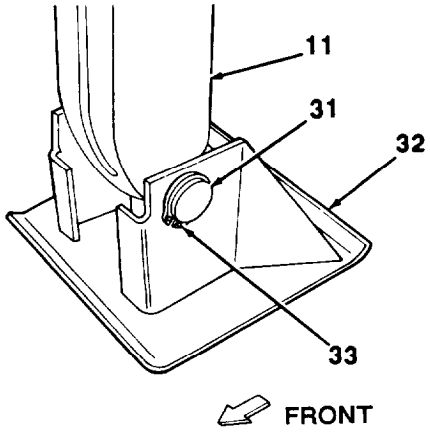
WARNING

Landing gear is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel.

(6) Remove six locknuts (16), washers (15), and bolts (8). Remove landing gear leg (11). Discard locknuts.



(7) Remove two retaining rings (33) at axle tube (31). Remove axle tube and sand shoe (32) from landing gear leg (11). Discard retaining rings.



NOTE

Perform steps 8 and 9 if longitudinal and transverse braces (17 and 27) are damaged and must be replaced.

(8) Remove locknut (1), washer (2), and bolt (4). Remove longitudinal brace (17) from frame (3). Discard locknut.

(9) Remove locknut (25), washer (24), and bolt (30). Remove transverse brace (27) from frame (3). Discard locknut.

4-52. LANDING GEAR REPLACEMENT (Con?).

b. CLEANING

(1) Remove all traces of old mylar tape from mounting surfaces of landing gear and braces to frame.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(2) Use dry cleaning solvent to clean mating surfaces of landing gear and braces to frame. Allow to dry thoroughly.

c. INSTALLATION

CAUTION

To protect against corrosion and distortion of components, mylar tape must be applied to mounting surfaces of landing gear and braces to frame.

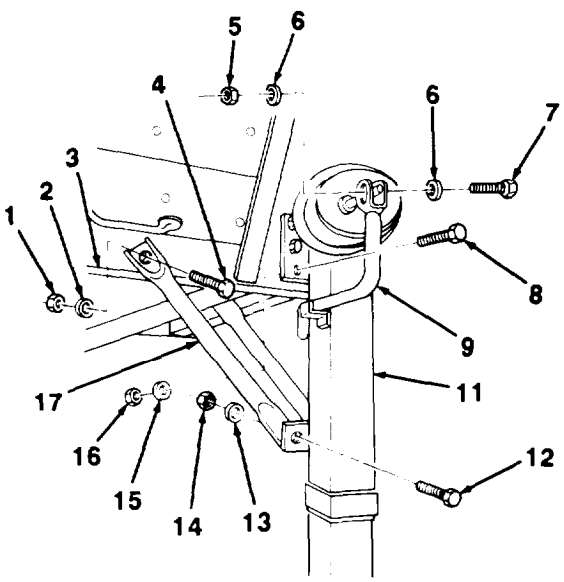
NOTE

- **Installation of curbside landing gear leg (11) is described. Roadside landing gear leg is installed the same, except that it has no handcrank (9).**
- **If installing sand shoe, perform step 12.**

(1) Apply suitable width of mylar tape to all mounting surfaces of landing gear and braces to frame. Pierce holes in mylar tape at mounting bolt holes to prevent water accumulation.

(2) If removed, install transverse brace (27) to frame (3) with bolt (30), washer (24), and new locknut (25). DO NOT fully tighten locknut.

(3) If removed, install longitudinal brace (17) to frame (3) with bolt (4), washer (2), and new locknut (1). DO NOT fully tighten locknut.



4-52. LANDING GEAR REPLACEMENT (Con't).

WARNING

Landing gear is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during installation. Failure to follow this warning may result in serious injury to personnel.

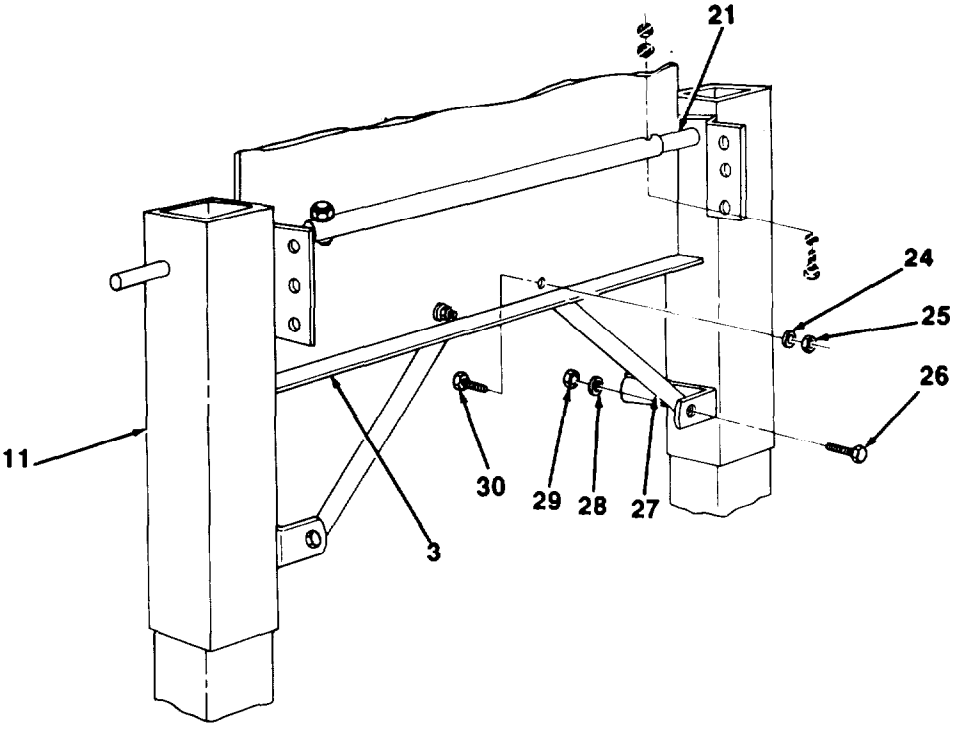
(4) Position landing gear leg (11) at frame (3) with mainshaft (21) fitted through hole in frame (3). install landing gear leg to frame with six bolts (8), washers (15), and new locknuts (16). DO NOT fully tighten locknuts.

(5) install longitudinal brace (17) to landing gear leg (11) with bolt (12), washer (13), and new locknut (14). DO NOT fully tighten locknut.

(6) Install transverse brace (27) to landing gear leg (11) with bolt (26), washer (28), and new locknut (29). DO NOT fully tighten locknut.

(7) install handcrank (9) with screw (7), two washers (6), and new locknut (5).

(8) Operate handcrank (9) to raise or lower curbside landing gear leg (11) to a height equal to roadside landing gear leg. Check that holes in two mainshafts (21) are alined with each other. If they are not alined, operate handcrank to adjust to the nearest alined position.

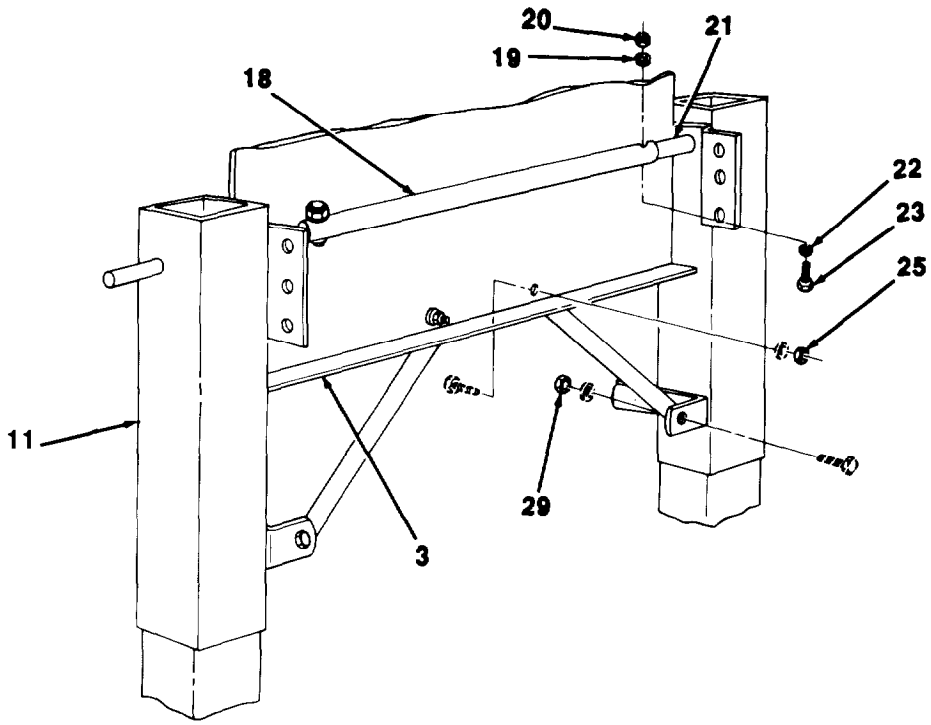


4-52. LANDING GEAR REPLACEMENT (Con't).

NOTE

Smaller washer (19) is installed on nut (20) side.

(9) If cross-shaft (18) was removed from other side mainshaft (21), install with bolt (23), two washers (19 and 22), and nut (20). Install cross-shaft to replacement landing gear leg mainshaft in same manner. Torque nuts to 15 lb.-ft. (20 N•m).



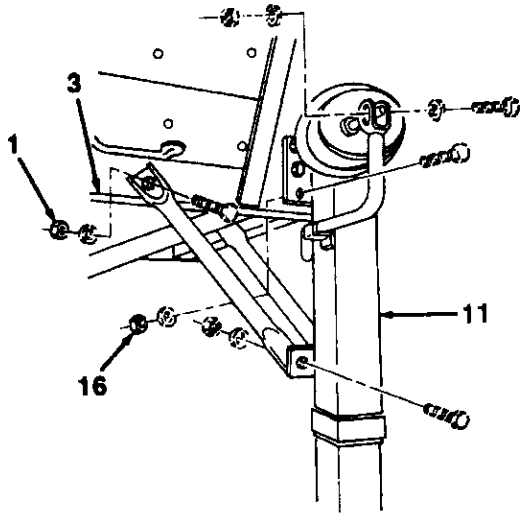
4-52. LANDING GEAR REPLACEMENT (Con't).

NOTE

Ensure landing gear leg (11) is square in relation to frame (3).

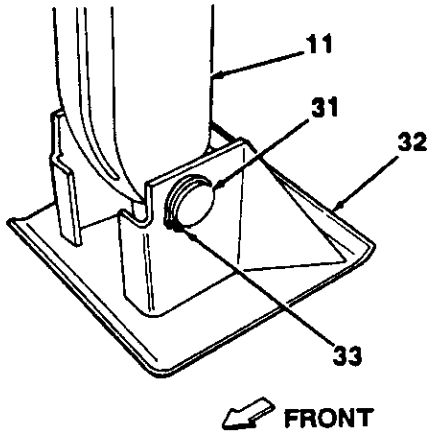
(10) Torque six locknuts (16) to 180 lb.-ft. (244 N•m). Torque locknuts (1, 16, 25, and 29) to 250 lb.-ft. (339 N•m).

(11) Trim excess mylar tape.



(12) Position sand shoe (32) at landing gear leg (11) with vertical edge of sand shoe facing front of semi-trailer. Slide in axle tube (31). Install two new retaining rings (33) at axle tube ends.

(13) Refer to Chapter 3, Section I to lubricate landing gear.



FOLLOW-ON TASKS:

Remove and stow chock blocks (see paragraph 2-11).

4-53. FIRE EXTINGUISHER MOUNTING BRACKET MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
---	Fire extinguisher removed.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

- Four grommets
- Four locknuts
- Dry cleaning solvent (Item 10, Appendix E)
- Mylar tape (Item 24, Appendix E)

General Safety Instructions:

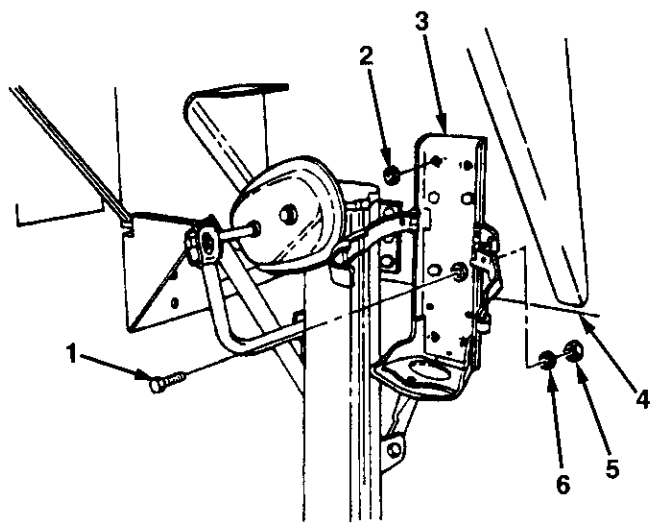
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. REMOVAL

(1) Remove four locknuts (5), screws (1), and washers (6) at fire extinguisher mounting bracket (3). Discard locknuts.

(2) Remove fire extinguisher mounting bracket (3) from frame (4).

(3) Remove four grommets (2) from fire extinguisher mounting bracket (3). Discard grommets.



b. CLEANING

(1) Remove all traces of old mylar tape from mounting surfaces of fire extinguisher mounting bracket (3) and frame (4).

4-53. FIRE EXTINGUISHER MOUNTING BRACKET MAINTENANCE.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(2) Use dry cleaning solvent to clean surfaces of fire extinguisher mounting bracket (3) that come in contact with frame (4). Allow to dry thoroughly.

c. INSTALLATION

CAUTION

To protect against corrosion and distribution of components, mylar tape must be applied to surfaces of fire extinguisher mounting bracket (3) that come in contact with frame (4).

(1) Apply suitable width of mylar tape to all surfaces of fire extinguisher mounting bracket (3) that come in contact with frame (4). Pierce holes in mylar tape at mounting bolt holes to prevent water accumulation.

(2) Install four new grommets (2) in fire extinguisher mounting bracket (3).

(3) Install fire extinguisher mounting bracket (3) on frame (4) with four screws (1), washers (6), and new locknuts (5).

(4) Trim excess mylar tape.

FOLLOW-ON TASKS:

Install fire extinguisher.

4-54. SPARE TIRE CARRIER REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-45	Spare tire removed.

Tools:

- Tool kit, general mechanic's
- Floor jack

Personnel Required: Two

Materials/Parts:

- Three locknuts
- Dry cleaning solvent (Item 10, Appendix E)
- Mylar tape (Item 24, Appendix E)

General Safety Instructions:

- Spare tire carrier is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal and installation.
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. REMOVAL

(1) Remove two locknuts (3), washers (2), and bolts (1) securing spare tire carrier (10) to cabinet (13) and frame. Discard locknuts.

(2) Remove bolt (15), two washers (5), and locknut (6), and disconnect cabinet brace (14) from spare tire carrier (10). Discard locknut.

WARNING

Spare tire carrier (10) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in injury to personnel.

(3) Place a suitable floor jack under spare tire carrier (10). Remove four nuts (7), washers (8), and bolts (4) from front and rear of spare tire carrier at curbside frame. Remove spare tire carrier.

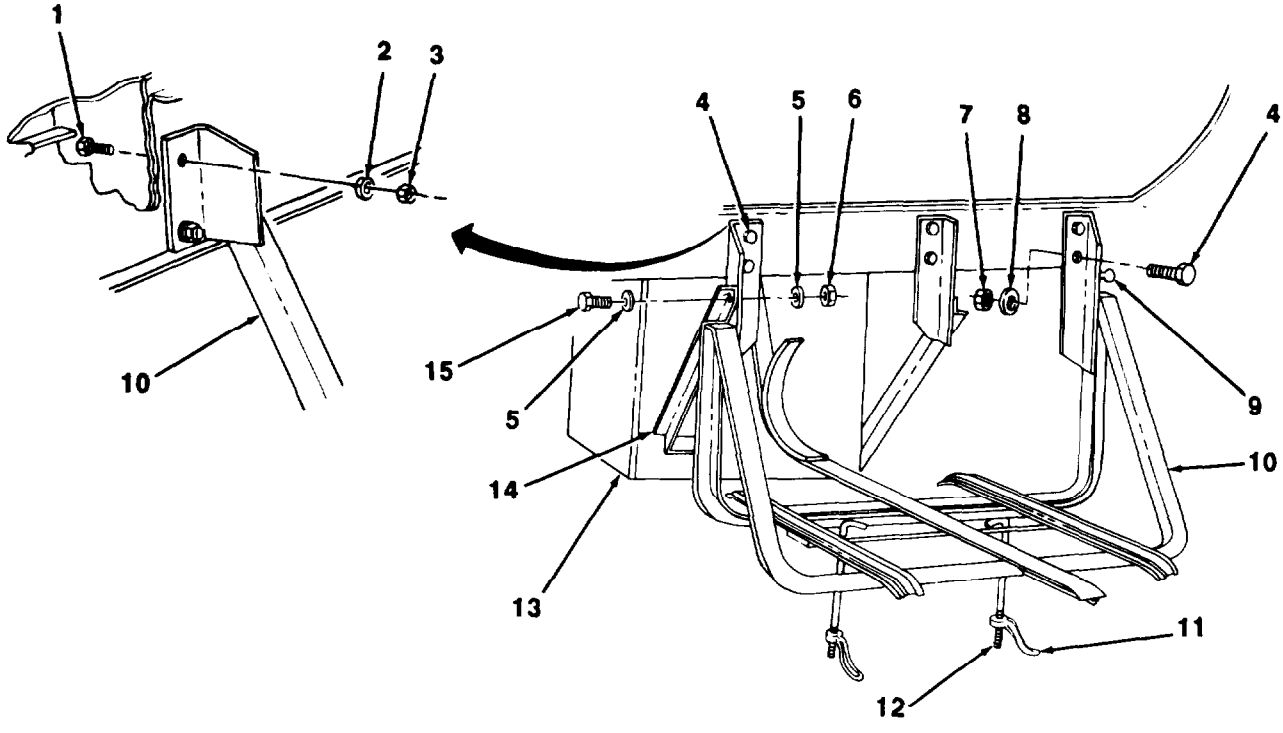
(4) If grounding stud (9) is not damaged, remove and set aside (see paragraph 4-64).

(5) If hook bolts (12) are damaged, remove two wingnuts (11) and hook bolts.

b. CLEANING

(1) Remove all traces of old mylar tape from mounting surfaces of spare tire carrier (10) and braces to frame.

4-54. SPARE TIRE CARRIER REPLACEMENT (Con't).



WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(2) Use dry cleaning solvent to clean mounting surfaces of spare tire carrier (10) and braces to frame. Allow to dry thoroughly.

c. INSTALLATION

CAUTION

To protect against corrosion and distortion of components, mylar tape must be applied to mounting surfaces of spare tire carrier (10) and braces to frame.

(1) Apply suitable width of mylar tape to all mounting surfaces of spare tire carrier (10) and braces to frame. Pierce holes in mylar tape at mounting bolt holes to prevent water accumulation.

(2) If removed, install two hook bolts (12) and wingnuts (11).

4-54. SPARE TIRE CARRIER REPLACEMENT (Con't).

WARNING

Spare tire carrier (10) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in injury to personnel.

(3) Place spare tire carrier (10) on a floor jack and raise into position. Loosely install front and rear of spare tire carrier to curbside frame with four bolts (4), washers (8), and nuts (7).

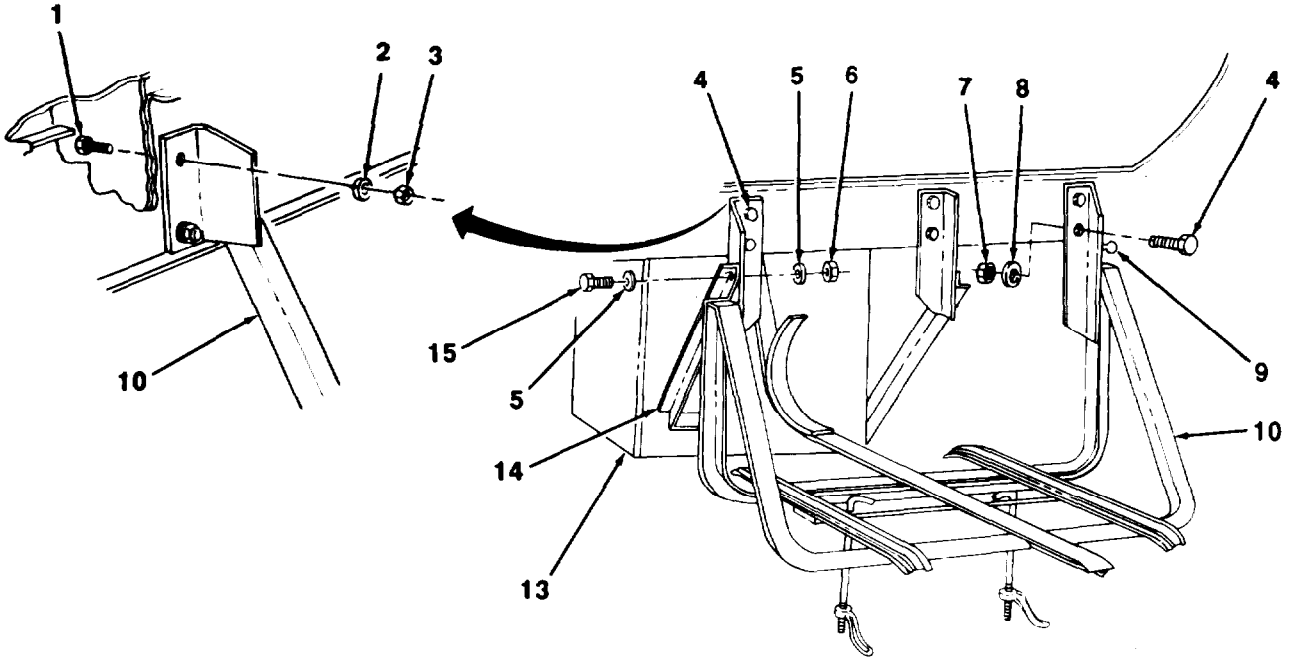
(4) Loosely connect cabinet brace (14) to spare tire carrier (10) with bolt (15), two washers (5), and new locknut (6).

(5) Loosely install spare tire carrier (10) to cabinet (13) and frame with two bolts (1), washers (2), and new locknuts (3).

(6) Tighten four nuts (7), two locknuts (3), and locknut (6) securely.

(7) Trim excess mylar tape.

(8) Install grounding stud (9) (see paragraph 4-64).



FOLLOW-ON TASKS:

Install spare tire (see paragraph 4-45).

Section X. SUSPENSION MAINTENANCE

Paragraph Number	Title	Page Number
4-55	Radius Rod and Radius Rod Bushing Replacement	4-173
4-56	Spring Replacement	4-176
4-57	Equalizer and Equalizer Bushing Replacement	4-179

4-55. RADIUS ROD AND RADIUS ROD BUSHING REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Condition
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstand
- Torque multiplier
- Torque wrench

Materials/Parts:

- Two locknuts
- Four bushings
- Detergent (Item 9, Appendix E)

Personnel Required: Two

4-55. RADIUS ROD AND RADIUS ROD BUSHING REPLACEMENT (Con't).

a. REMOVAL

NOTE

Front and rear and adjustable and fixed radius rods (12) are removed the same. Removal of an adjustable radius rod is illustrated.

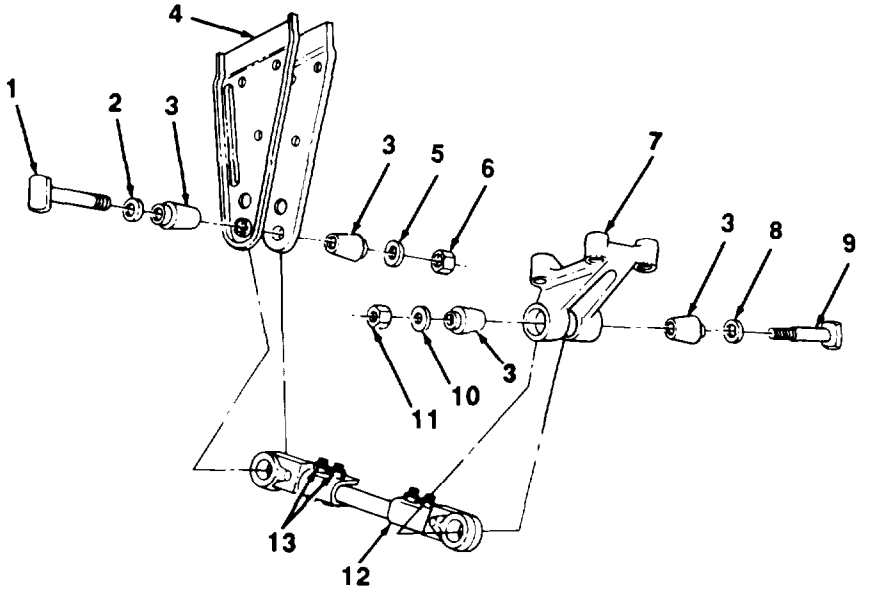
(1) Use a floor jack placed under end of axle in front of brake chamber to raise wheels off ground. Support axle end with a jackstand. Remove tires (see paragraph 4-45).

(2) Remove locknut (11), thick washer (10), bolt (9), and thin washer (8) at axle bracket (7). Discard locknut.

(3) Remove locknut (6), thick washer (5), bolt (1), and thin washer (2) at frame hanger (4). Discard locknut.

(4) Work bushings (3) loose and remove. Discard bushings.

(5) Remove radius rod (12).



b. INSTALLATION

(1) Lightly coat four new bushings (3) with a mixture of 50% water and 50% detergent.

NOTE

- **Adjustable radius rods (12) are installed roadside. Fixed radius rods are installed curbside.**
- **Adjustable radius rods (12) should be installed so that end casting with stamped "F" is toward the front. To extend the adjustable radius rod, a clockwise rotation (when looking to front) is required.**

(2) If installing an adjustable radius rod (12), loosen four nuts (13) and adjust length to equal original adjustable radius rod length. Leave nuts loose.

4-55. RADIUS ROD AND RADIUS ROD BUSHING REPLACEMENT (Con't).

(3) Position radius rod (12) between frame hanger (4) and axle bracket (7). Alining radius rod and axle bracket holes, install one bushing (3) from outside of axle bracket.

NOTE

Ensure that radius rod (12) is installed to axle bracket (7) with locknut (11) on outside.

(4) Assemble thin washer (8) and other bushing (3) on bolt (9). Install bolt, thick washer (10), and new locknut (11). DO NOT fully tighten locknut.

NOTE

To aid in alinement, axle may be raised or lowered, as required.

(5) Alining radius rod (12) and frame hanger (4) holes, install one bushing (3) from inside of frame hanger.

NOTE

Ensure that radius rod (12) is installed to frame hanger (4) with locknut (6) on inside.

(6) Assemble thin washer (2) and other bushing (3) on bolt (1). Install bolt, thick washer (5), and new locknut (6).

(7) Torque locknuts (6 and 11) to 360 lb.-ft. (468 N•m). If loose, torque four nuts (13) on adjustable radius rod (12) to 110 lb.-ft. (149 N•m).

(8) Check that all suspension components are tightened to proper specification (see paragraphs 4-55 through 4-57).

(9) Install tires (see paragraph 4-45). Remove jackstand. Lower end of axle and remove floor jack.

(10) Check front and rear axle alinement and aline axles as required (see paragraph 4-31).

FOLLOW-ON TASKS:

Remove and stow chock blocks (see paragraph 2-11).

4-56. SPRING REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning and Inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstand
- Torque multiplier
- Torque wrench

Personnel Required: Two

Materials/Parts:

- Two locknuts
- Two rebound bolts
- Dry cleaning solvent (Item 10, Appendix E)
- Grease (Item 12, Appendix E)

General Safety Instructions:

Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

a. REMOVAL

(1) Place floor jack under axle end in front of brake chamber and raise end of axle (13). Support end of axle with jackstand. Remove both tires (see paragraph 4-45).

(2) Use a floor jack to raise frame at bumper until spring (8) is clear of hangers (2).

(3) Remove locknut (1) and rebound bolt (3) at frame hanger (2). Discard locknut and rebound bolt.

(4) Remove four nuts (12). washers (11), two U-bolts (4), saddle (9), and delrin liner (14).

NOTE

Rear spring rebound bolt at equalizer (6) is a welded piece and cannot be removed.

(5) Remove locknut (5) and rebound bolt (7) at equalizer (6). Discard locknut and rebound bolt.

(6) Remove spring (8).

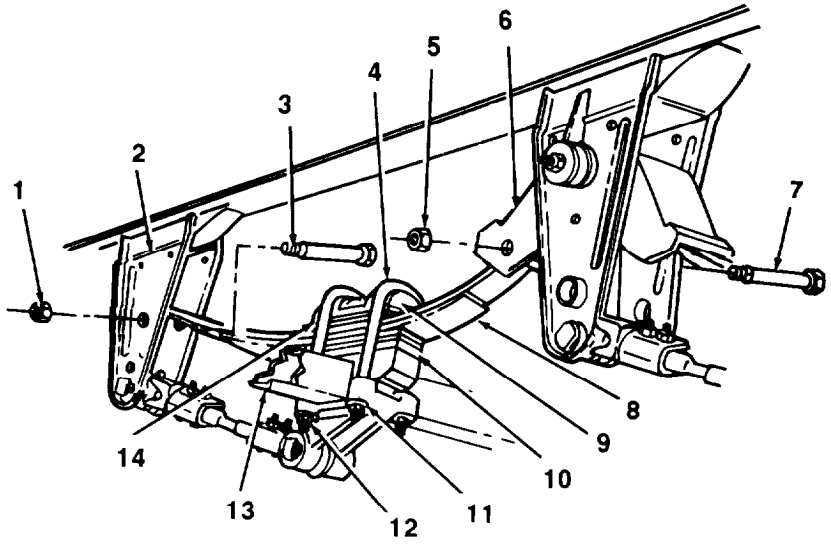
b. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point Is 100°F-138°F (38°-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(1) Clean all removed components with dry cleaning solvent.

4-56. SPRING REPLACEMENT (Con't).



(2) Inspect all removed components for damage. If any leaf of spring is damaged, replace springs on roadside and curbside.

c. INSTALLATION

(1) Apply a thin coat of grease on inside surfaces of equalizer (6) and frame hanger (2).

NOTE

Rear axle (13) has no spacers (10).

(2) Position spring (8) over axle (13). If installing spring over a front axle, ensure spring center bolt fits in hole in spacer (10). If installing spring over a rear axle, ensure spring center bolt fits in hole in axle spring seat.

(3) If installing a rear spring (8), ensure spring end is hooked over welded rebound bolt at equalizer (6).

NOTE

Install rebound bolt locknuts (1 and 5) to outside of frame hanger (2) and equalizer (6).

(4) If installing front spring (8), install new rebound bolt (7) and new locknut (5) at equalizer (6). DO NOT fully tighten locknut.

(5) Install new rebound bolt (3) and new locknut (1) at frame hanger (2). DO NOT fully tighten locknut.

4-56. SPRING REPLACEMENT (Con't).

(6) Tap on spring (8) to aline it in frame hanger (2) and equalizer (6). Torque locknuts (1 and 5) to 50 lb.-ft. (68 N•m).

(7) Install delrin liner (14), saddle (9), two U-bolts (4), four washers (11), and nuts (12).

(8) Torque four nuts (12) in a diagonal sequence to 150 lb.-ft. (203 N•m). Torque same four nuts in same diagonal sequence to 360 lb.-ft. (488 N•m).

NOTE

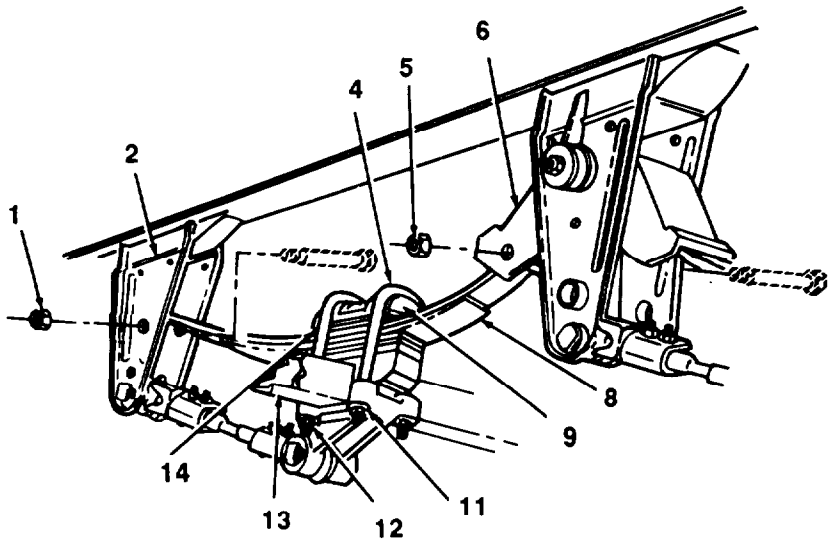
Paint, rust, or other contaminants can give a false torque reading. Step 9 must be performed to ensure a proper torque.

(9) Back off four nuts (12) two turns, then torque to 360 lb.-ft. (488 N•m).

(10) Lower frame.

(11) Install tires (see paragraph 4-45).

(12) Remove jackstand and lower axle (13).



FOLLOW-ON TASKS:

Remove and stow chock blocks (see paragraph 2-11).

4-57. EQUALIZER AND EQUALIZER BUSHING REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-56	Front or rear spring removed (if replacing equalizer).

Tools:

- Tool kit, general mechanic's
- Floor jack
- Jackstand
- Torque multiplier
- Torque wrench

Materials/Parts:

- One rebound bolt
- Two bushings
- Two locknuts
- Detergent (Item 9, Appendix E)

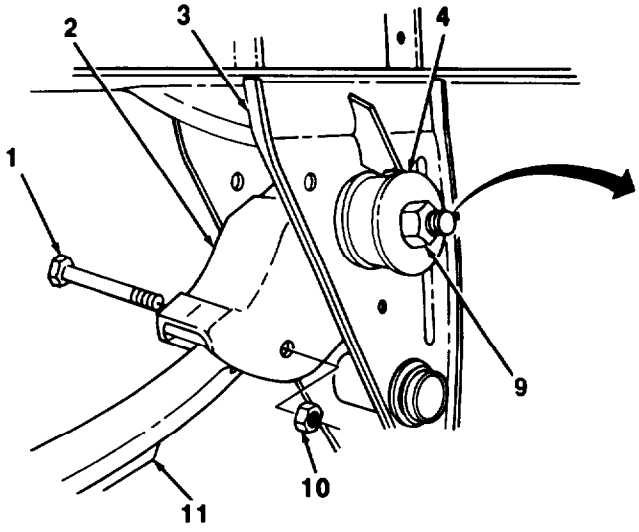
a. REMOVAL

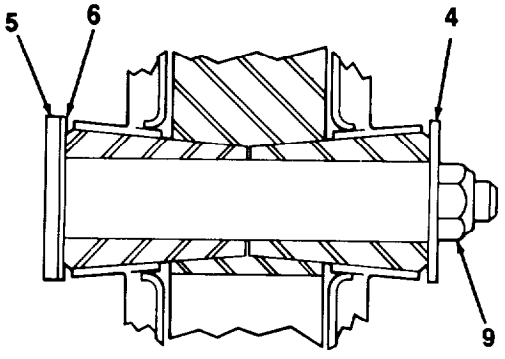
(1) If spring (11) has not been removed, place floor jack under rear axle in front of brake chamber and raise end of axle. Support end of axle with jackstand. Remove both tires (see paragraph 4-45).

(2) If spring (11) has not been removed, use a floor jack to raise frame at bumper until spring is clear of hangers (3).

(3) If front spring (11) is installed and if equalizer (2) is being replaced, remove locknut (10) and rebound bolt (1) at equalizer. Discard locknut and rebound bolt.

(4) Remove locknut (9), thick washer (4), bolt (5), and thin washer (6). Discard locknut.

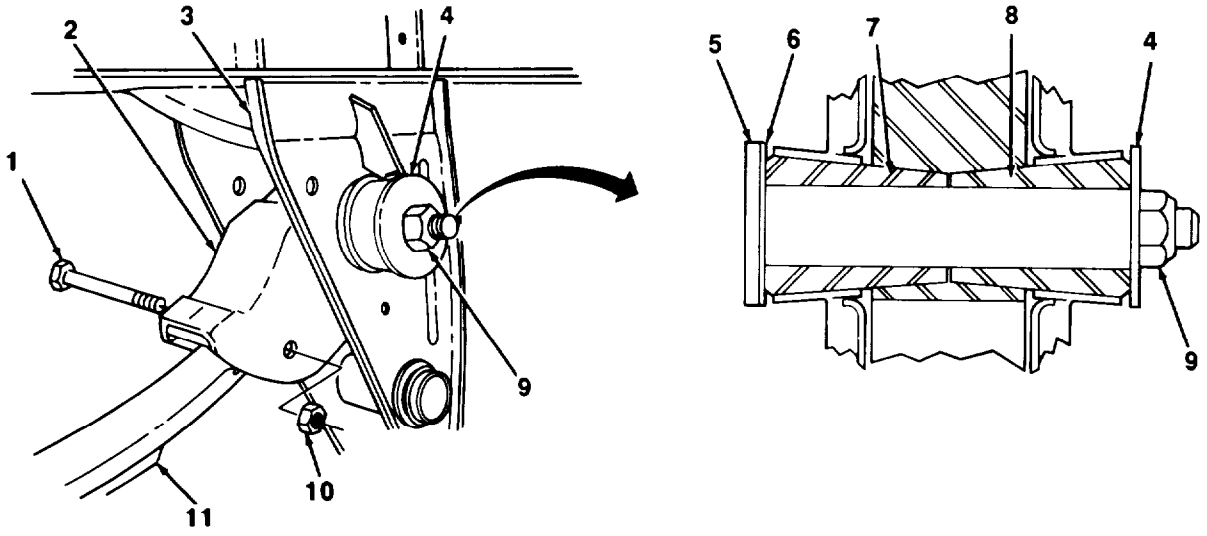




4-57. EQUALIZER AND EQUALIZER BUSHING REPLACEMENT (Con't).

(5) Work bushings (7 and 8) loose and remove. Discard bushings.

(6) Remove equalizer (2), if damaged.



b. INSTALLATION

(1) Lightly coat two new bushings (7 and 8) with a mixture of 50% water and 50% detergent.

(2) If removed, position equalizer (2) at frame hanger (3).

(3) Alining equalizer (2) and frame hanger (3), install bushing (8) with a rawhide hammer.

NOTE

Bolt (5) at equalizer (2) must be installed with locknut (9) to outside.

(4) Assemble thin washer (6) and bushing (7) on bolt (5). Install bolt, thick washer (4), and new locknut (9). DO NOT fully tighten locknut.

(5) If' removed, install new rebound bolt (1) and new locknut (10). Torque locknut to 50 lb.-ft. (68 N•m).

(6) Torque locknut (9) to 350 lb.-ft. (475 N•m).

(7) If removed, install front or rear spring (11) (see paragraph 4-56).

(8) Lower frame. Remove jackstand and lower axle.

Section XI. BODY MAINTENANCE

Paragraph Number	Title	Page Number
4-58	Fender and Center Fender Bracket Replacement	4-181
4-59	Splashguard Replacement	4-184
4-60	Nose Adapter Replacement	4-185
4-61	Piping Assembly Support Bracket Replacement	4-186
4-62	Ground Rod Tube Assembly Replacement	4-188
4-63	Hose and Gage Stick Tube Assembly Replacement	4-190
4-64	Grounding Stud Replacement	4-192
4-65	Grounding Reel Maintenance	4-194
4-66	Light Box Replacement	4-195
4-67	Manhole and Fill Cover Maintenance	4-201
4-68	Purging Tank	4-204

4-58. FENDER AND CENTER FENDER BRACKET REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equiptment Conditions:

Ref	Conditions
– –	Chock block disconnected from center fender bracket and removed.

Materials/Parts:

- Twenty locknuts

Personnel Required: Two

Tools:

- Tool kit, general mechanic's

4-58. FENDER AND CENTER FENDER BRACKET REPLACEMENT (Con't).

a. REMOVAL

(1) Remove eight locknuts (9), washers (8), and screws (7) from top of fender (2). Discard locknuts.

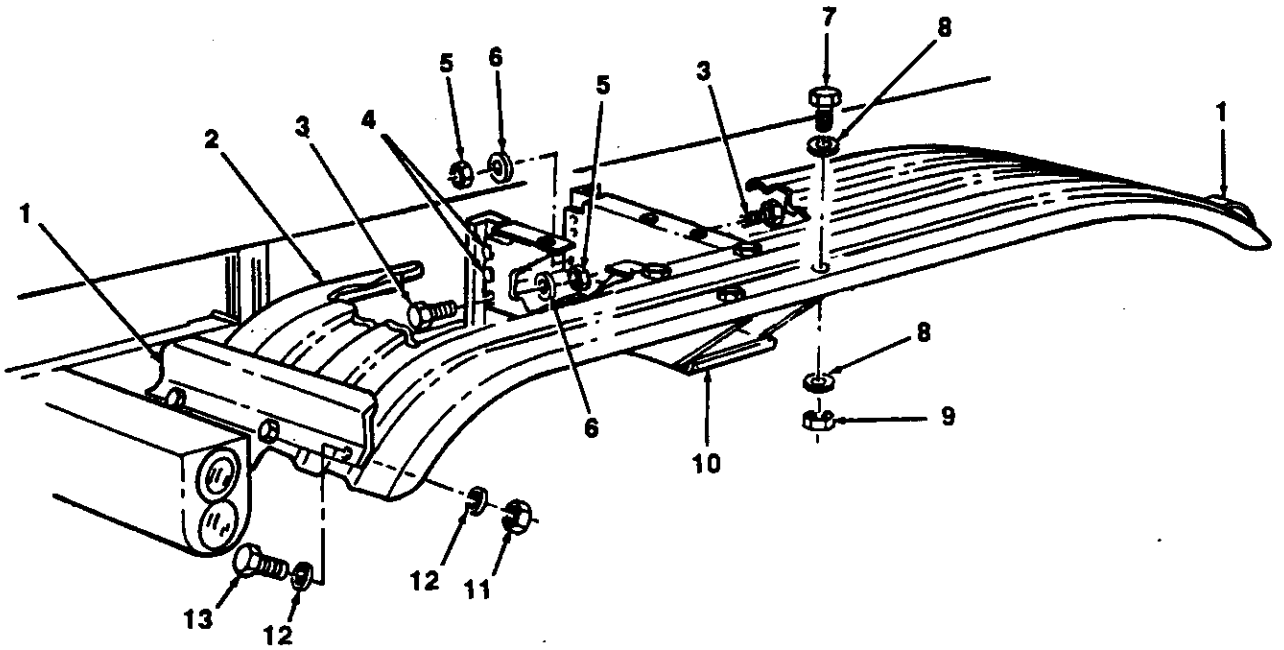
(2) Remove top four locknuts (5), washers (6), and screws (4) securing center fender bracket (10) to semitrailer. Loosen bottom two locknuts.

(3) Swing center fender bracket (10) down clear of fender (2).

(4) At front and rear fender brackets (1), remove six screws (13), washers (12), and locknuts (11). Remove fender (2). Discard locknuts.

(5) If center fender bracket (10) is damaged, remove two bottom locknuts (5), washers (6), and screws (3). Remove center fender bracket. Discard locknuts.

(6) Replace center fender bracket (10).



b. INSTALLATION

(1) If removed, loosely install center fender bracket (10) with two bottom screws (3), washers (6), and new locknuts (5). Let center fender bracket hang down.

(2) Loosely install fender (2) to front and rear fender brackets (1) with six screws (13), washers (12), and new locknuts (11).

(3) Swing center fender bracket (10) up into position against fender (2). Alining bolt holes, loosely install eight screws (7), washers (8), and new locknuts (9).

4-58. FENDER AND CENTER FENDER BRACKET REPLACEMENT (Con't).

(4) Loosely install top four screws (4), washers (5), and new locknuts (6).

(5) Fully tighten six locknuts (6), eight locknuts (10), and six locknuts (11).

FOLLOW-ON TASKS:

Connect chock block to center fender bracket and stow.

4-59. SPLASHGUARD REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Tools:

- Tool kit, general mechanic's

a. REMOVAL

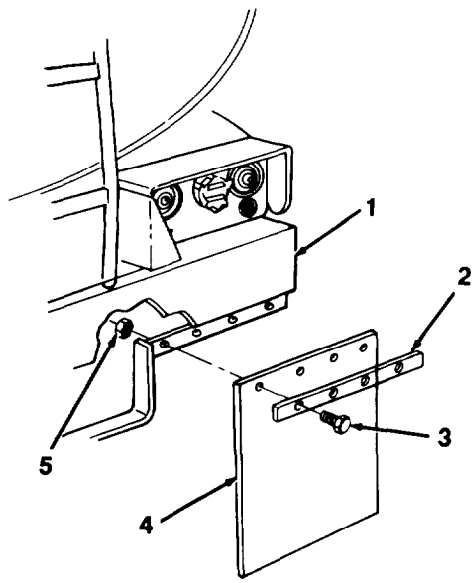
(1) Remove four nuts (5), bolts (3), and mounting bracket (2).

(2) Remove splashguard (4) from bumper (1).

b. INSTALLATION

(1) Position splashguard (4) and mounting bracket (2) at bumper (1).

(2) Install four bolts (3) and nuts (5). Tighten nuts securely.



4-60. NOSE ADAPTER REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions

4-38 SERVICE and EMERGENCY air couplings removed from nose adapter.

4-14 Voltage control unit removed.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

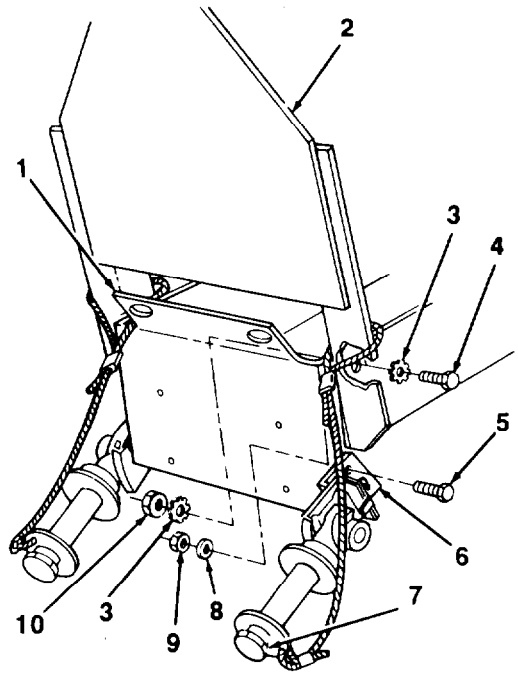
- Eight locknuts
- Eight starwashers

Personal Required: Two

a. REMOVAL

(1) Remove four locknuts (9), washers (8), and screws (5). Remove two storage brackets (6) for dummy couplings (7) from nose adapter (1). Let dummy couplings hang from fuel warning placard (2). Discard locknuts.

(2) Remove four locknuts (10), eight starwashers (3), and four screws (4). Remove fuel warning placard (2) and dummy couplings (7). Remove nose adapter (1) from mounting brackets. Discard locknuts and starwashers.



b. INSTALLATION

(1) Thread cable loops of dummy couplings (7) through fuel warning placard (2) extensions. Install nose adapter (1) and fuel warning placard to mounting brackets with four screws (4), eight new starwashers (3) and four new locknuts (10).

(2) Install two storage brackets (6) for dummy couplings (7) to nose adapter (1) with four screws (5), washers (8). and new locknuts (9). Hang dummy couplings on storage brackets.

FOLLOW-ON TASKS:

- Install voltage control unit (see paragraph 4-14).
- Install SERVICE and EMERGENCY air couplings to nose adapter (see paragraph 4-38).

4-61. PIPING ASSEMBLY SUPPORT BRACKET REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
- -	Piping assembly supported with jack-stand.

Materials/Parts:

- Four locknuts
- Four lockwashers

Tools:

- Tool kit, general mechanic's

a. REMOVAL

CAUTION

- **Use caution when removing air lines (10) from clips. Clips should be lifted gently and only enough to release air lines. Improper handling of clips will cause them to break.**
- **Use caution not to damage air lines (10).**

(1) Remove brake interlock air lines (10) from clips at support bracket (4).

(2) Remove four nuts (8), lockwashers (7), washers (9), and two U-bolts (6) securing piping assembly to support bracket (4). Discard lockwashers.

(3) Remove four locknuts (3) eight washers (2), and four screws (1). Remove support bracket (4) from frame (5). Discard locknuts.

b. INSTALLATION

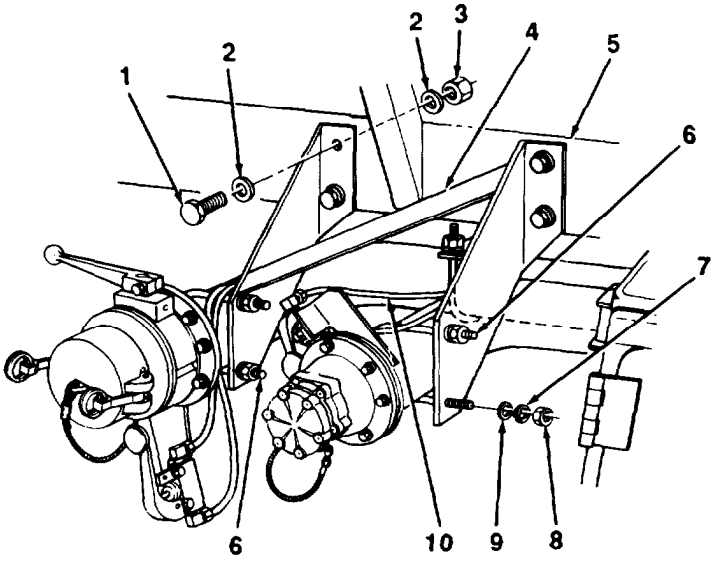
CAUTION

Use caution not to damage air lines (10).

(1) Install support bracket (4) to frame (5) with four screws (1), eight washers (2), and four new locknuts (3). Tighten locknuts securely.

(2) Install piping assembly to support bracket (4) with two U-bolts (6), four washers (9), new lockwashers (7), and nuts (8).

4-61. PIPING ASSEMBLY SUPPORT BRACKET REPLACEMENT (Con't).



CAUTION

Use caution when installing air lines (10) under clips. When securing air lines under clips, a soft-faced hammer should be used to tap clips back into **place. Improper handling of clips will cause them to break.**

NOTE

If two or more consecutive clips are missing or damaged, notify direct support maintenance.

(3) Install brake interlock air lines (10) under clips at support bracket (4).

FOLLOW-ON TASKS:

Remove jackstand from piping assembly.

4-62. GROUND ROD TUBE ASSEMBLY REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions

- - Ground rod removed.

Tools:

- Tool kit, general mechanic's

Materials/Parts:

One locknut

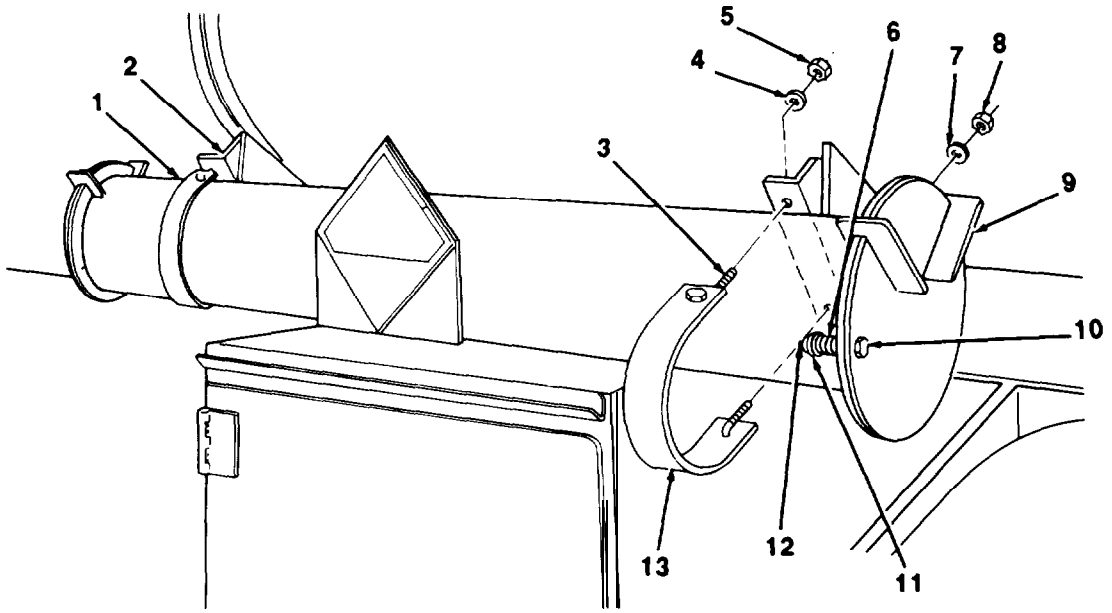
Personnel Required: Two

a. REMOVAL

NOTE

- **If removing door (9), perform step 1.**
- **Note position of washers (11) for installation.**

(1) Remove locknut (12), two washers (11), compression spring (6) and screw (10). Remove door (9). Discard locknut.



4-62. GROUND ROD TUBE ASSEMBLY REPLACEMENT (Con't).

(2) At each end of ground rod tube assembly (1) remove nut (5) and washer (4) from top hook bolt (3).

(3) Pull down on two retaining straps (13) and remove ground rod tube assembly (1).

(4) If a retaining strap (13) is damaged, remove nut (8) and washer (7) from bottom hook bolt (3). Remove retaining strap. Remove two hook bolts from retaining strap.

b. INSTALLATION

NOTE

If installing door (9), perform step 3.

(1) If removed, install hook bolts (3) to retaining strap (13). Install retaining strap to mounting angle (2) with bottom hook bolt, washer (7), and nut (8).

NOTE

To gain enough length in retaining straps (13) to install ground rod tube assembly (1), it may be necessary to loosen two nuts (8).

(2) Install ground rod tube assembly (1) to two mounting angles (2) with two hook bolts (8), washers (4) and nuts (5). If loosened, tighten two nuts (8).

(3) Install door (9) to ground rod tube assembly (1) with screw (10), two washers (11), compression spring (6), and new locknut (12).

FOLLOW-ON TASKS:

Stow ground rod.

4-63. HOSE AND GAGE STICK TUBE ASSEMBLY REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
-- Transfer hoses and gage stick removed.

Tools:

- Tool kit, general mechanic's

Personnel Required: Three

Materials/Parts:

- Ten locknuts

General Safety Instructions:

- Hose and gage stick tube assembly is heavy and awkward to handle. Use caution and assistance during removal and installation.

a. REMOVAL

WARNING

Hose and gage stick tube assembly (10) is heavy and awkward to handle. Use caution and assistance during removal. Failure to follow this warning may result in injury to personnel.

NOTE

If removing lockspring (9) from door (11), perform step 4.

(1) Remove four locknuts (4) and washers (5) at four top hook bolts (6). Discard locknuts.

(2) Pull down on four retaining straps (7) and remove hose and gage stick assembly (10).

(3) If a retaining strap (7) is damaged, remove locknut (14) and washer (13) from bottom hook bolt (6). Remove retaining strap. Remove two hook bolts from retaining strap. Discard locknut.

(4) Remove two locknuts (12), screws (3) and washers (2). Remove lockspring (9) from mounting channel (8). Remove lockspring from other end in same manner. Discard locknuts.

b. INSTALLATION

WARNING

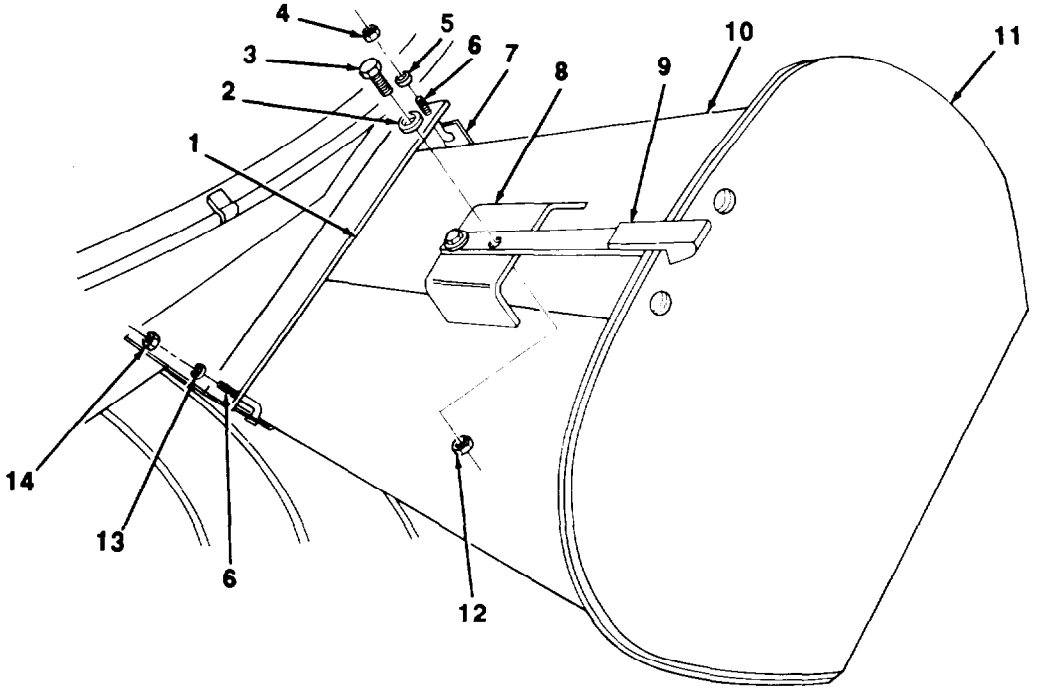
Hose and gage stick tube assembly (10) is heavy and awkward to handle. Use caution and assistance during installation. Failure to follow this warning may result in injury to personnel.

NOTE

If installing lockspring (9), perform step 1.

(1) Install lockspring (9) to mounting channel (8) with two washers (2), screws (3), and new locknuts (12). Close door (11) and secure with lockspring. Repeat to install lockspring on other end.

4-63. HOSE AND GAGE STICK TUBE ASSEMBLY REPLACEMENT (Con't).



(2) If removed, install two hook bolts (6) to retaining strap (7). Install retaining strap to mounting angle (1) with bottom hook bolt, washer (13), and new locknut (14),

NOTE

To gain enough length in retaining straps (7) to install hose and gage stick assembly (10), it may be necessary to loosen four locknuts (14).

(3) Install hose and gage stick tube assembly (10) to four mounting angles (1) with four top hook bolts (6), washers (5) and new locknuts (4). If loosened, tighten four locknuts (14).

FOLLOW-ON TASKS:

Stow transfer hoses and gage stick.

4-64. GROUNDING STUD REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Materials/Parts:

- One locknut
- One starwasher
- Dry cleaning solvent (Item 10, Appendix E)

Tools:

- Tool kit, general mechanic's

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- Grounding connections must be made to clean, unpainted surfaces.

NOTE

For location of all grounding studs (2), refer to paragraph 1-7.

a. REMOVAL

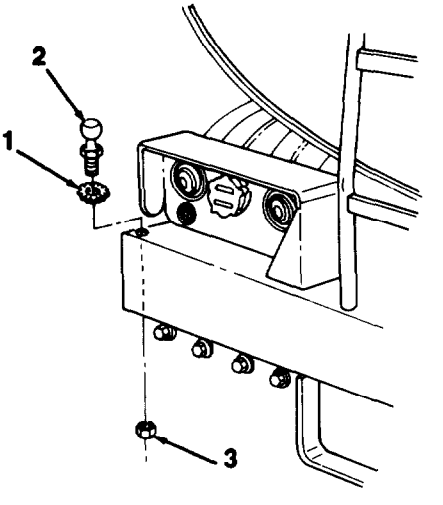
Remove locknut (3) grounding stud (2) and stat-washer (1). Discard locknut and starwasher.

b. CLEANING

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

If grounding stud (2) is covered with grease or dirt, clean with dry cleaning solvent.



4-64. GROUNDING STUD REPLACEMENT (Con't).

c. INSTALLATION

WARNING

Grounding stud (2) must be installed to clean, bare metal. An unbonded, ungrounded, or improperly bonded or grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel.

(1) If mounting surface of grounding stud (2) is painted, scrape off paint to bare metal.

(2) Install new starwasher (1), grounding stud (2), and new locknut (3).

(3) Check that *International Grounding Symbol* (⏚) and *DO NOT PAINT* stencils are legible. Grounding stud (2) must never be painted.

4-65. GROUNDING REEL MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Disassembly
c. Assembly
d. Installation

INITIAL SETUP

Tools:

- Tool kit, general mechanic's

Materials/Parts:

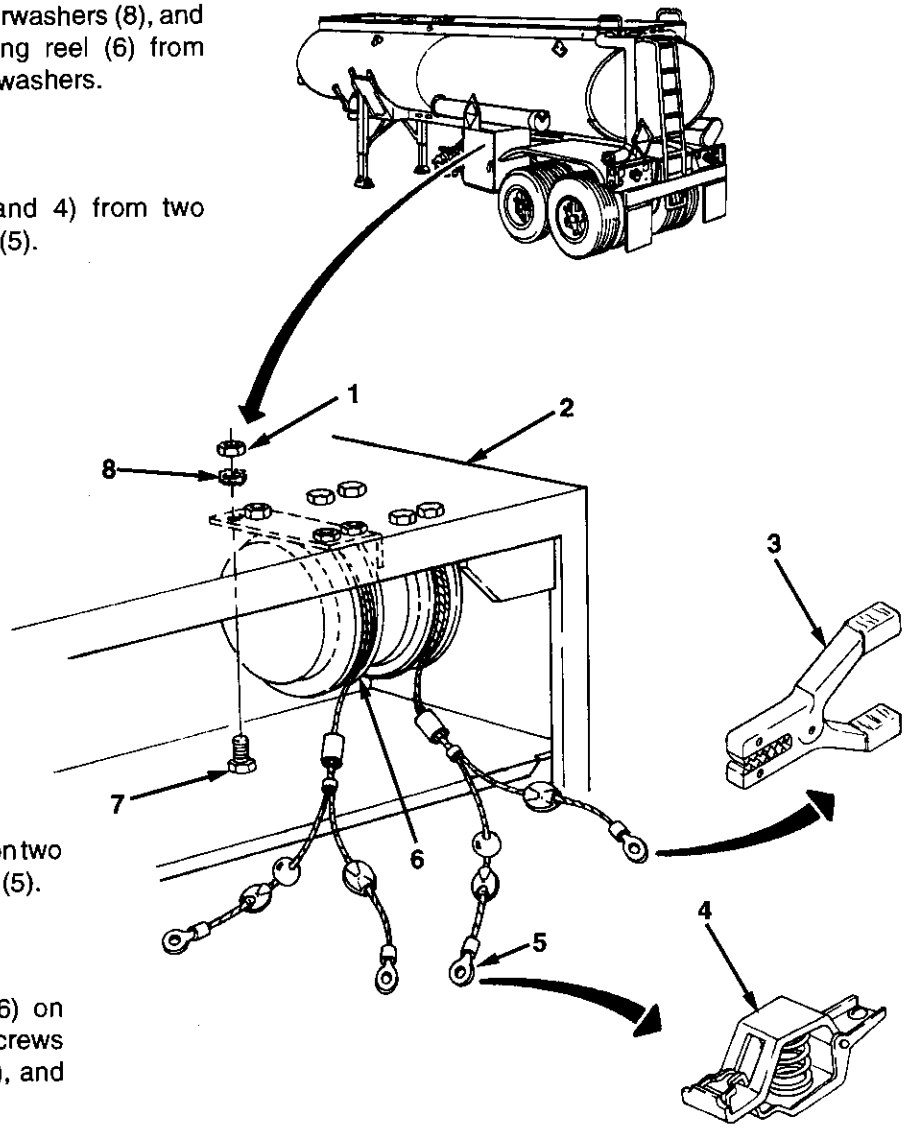
- Four starwashers

a. REMOVAL

Remove four nuts (1), starwashers (8), and screws (7) and grounding reel (6) from cabinet (2). Discard starwashers.

b. DISASSEMBLY

Remove two clips (3 and 4) from two grounding reel terminals (5).



c. ASSEMBLY

Install two clips (3 and 4) on two grounding reel terminals (5).

d. INSTALLATION

Install grounding reel (6) on cabinet (2) with four screws (7), new starwashers (8), and nuts (1).

4-66. LIGHT BOX REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-20 Stop/taillight removed.
4-19 Blackout light removed.
4-21 Turn signal/taillight removed.
4-26 Rear side clearance and marker light removed.
4-22 Convoy warning light toggle switch removed.

Tools:

- Tool kit, general mechanic's
- Wire terminal kit

Materials/Parts:

- One connector
- Three grommets
- Four locknuts
- Corrosion preventive compound (Item 7, Appendix E)
- Tag marker (Item 21, Appendix E)

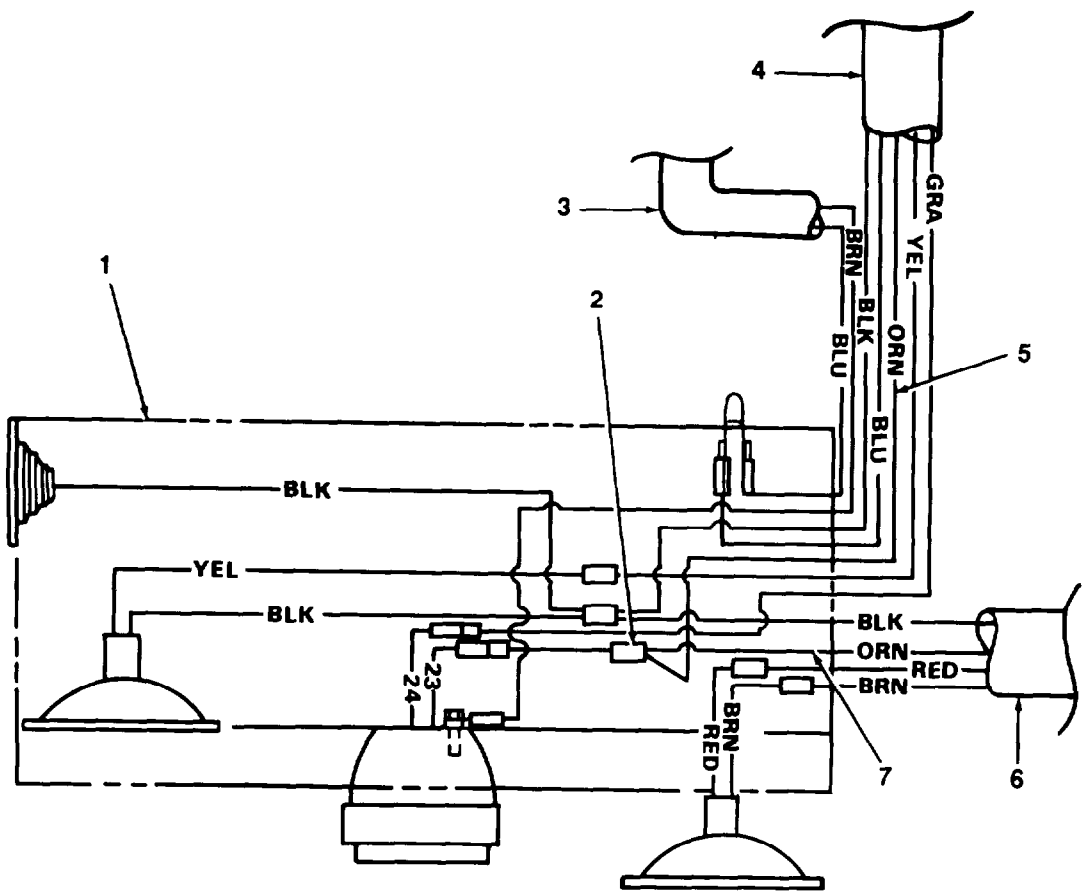
4-66. LIGHT BOX REPLACEMENT (Con't).

a. REMOVAL

NOTE

Tag wires for installation.

(1) If removing light box (1) on roadside, cut connector (2) and disconnect chassis orange wire (5) from rear conduit orange wire (7). Discard connector.



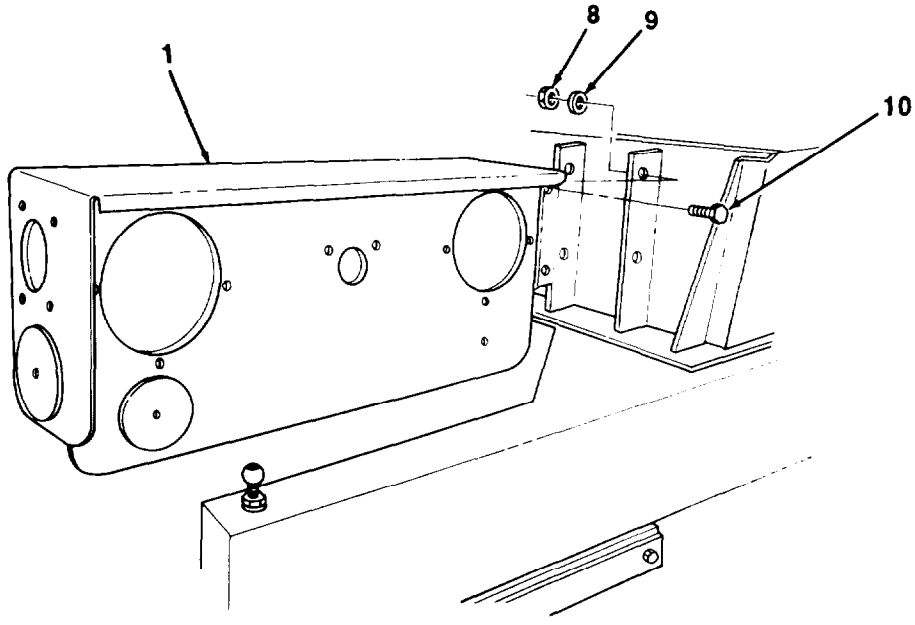
CAUTION

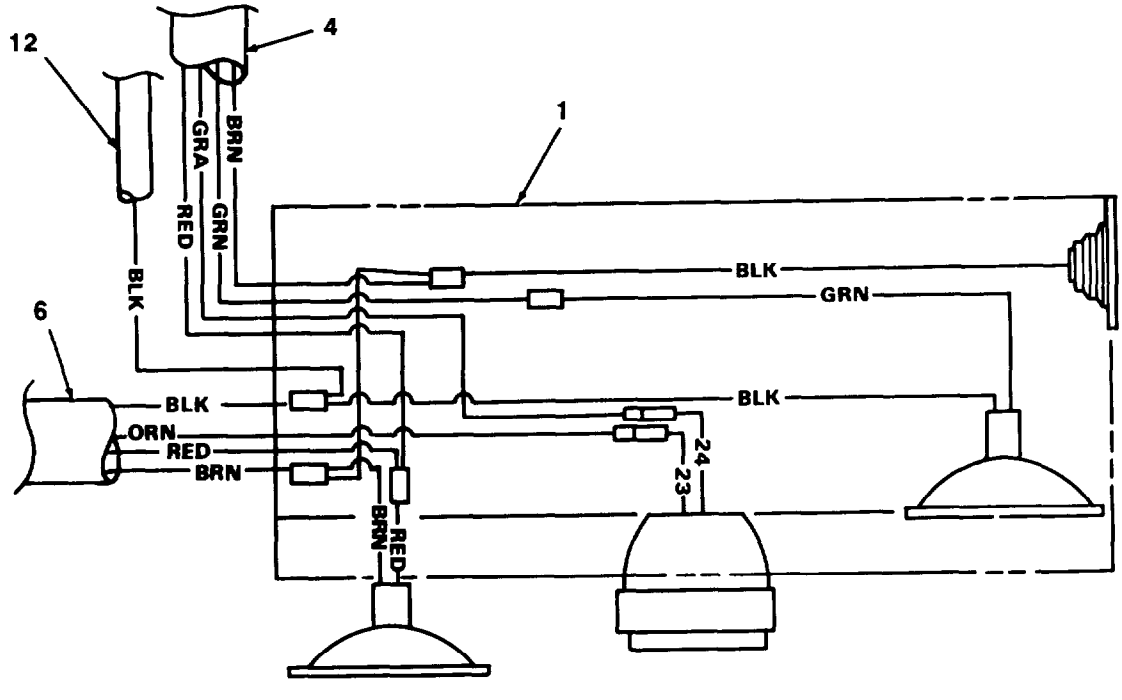
Use caution not to damage wires when removing conduits from light box (1).

(2) Remove four locknuts (8), washers (9), and bolts (10). If on roadside, pull light box (1) away from chassis conduit (4), convoy warning light conduit (3), and rear conduit (6). If on curbside, pull light box away from chassis conduit, triple clearance light conduit (12). and rear conduit. Remove light box. Discard locknuts.

(3) Remove three grommets from conduit holes in light box (1) and discard.

4-66. LIGHT BOX REPLACEMENT (Con't).





4-66. LIGHT BOX REPLACEMENT (Con't).

b. INSTALLATION

NOTE

- **Refer to wiring diagram, as required, to aid in wiring lights inside light box (1) after installation (see paragraph 4-30).**
- **Ensure that all wire connections are made to clean, uncorroded surfaces. Coat all wire connections with corrosion preventive compound before they are made.**

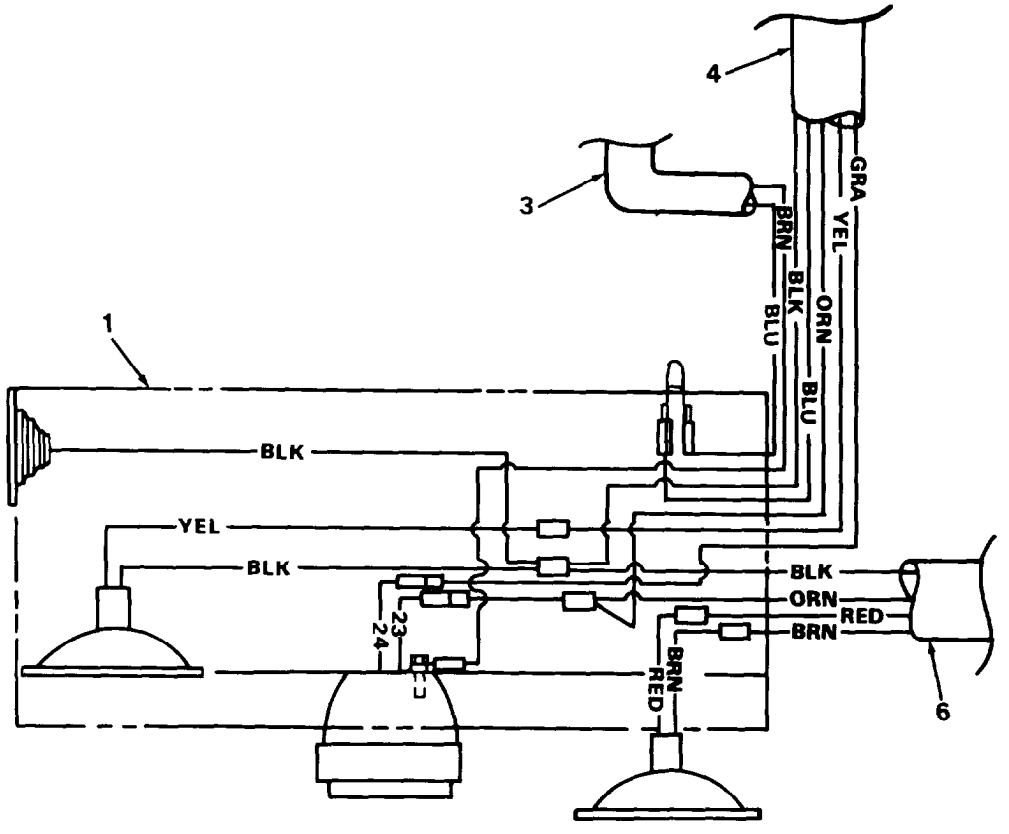
(1) Install reflectors (11) (see paragraph 4-27).

(2) Install three new grommets to conduit holes in light box (1).

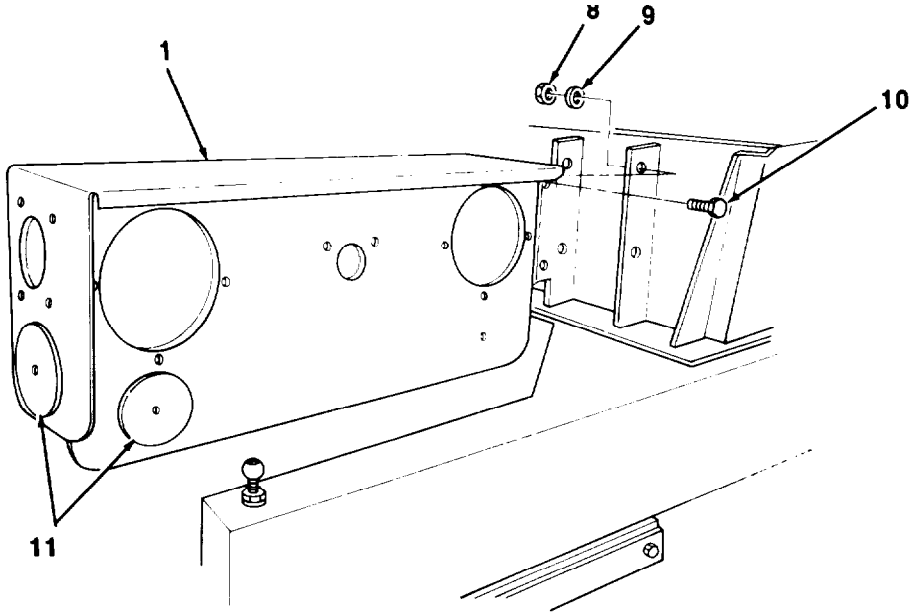
CAUTION

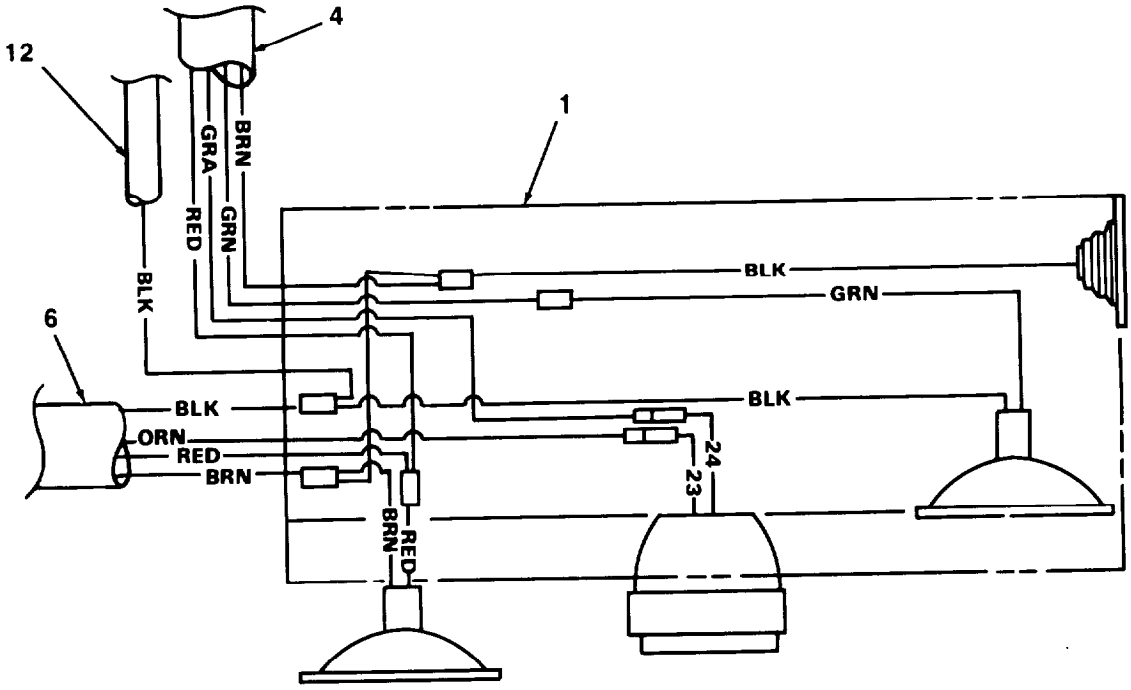
Use caution not to damage wires when installing conduits to light box (1).

(3) Position light box (1) at bumper. If on roadside, feed chassis conduit (4) convoy warning light conduit (3), and rear conduit (6) through grommets in light box. If on curbside, feed chassis conduit, triple clearance light conduit (12), and rear conduit through grommets in light box. Install light box with four bolts (10), washers (9), and new locknuts (8).



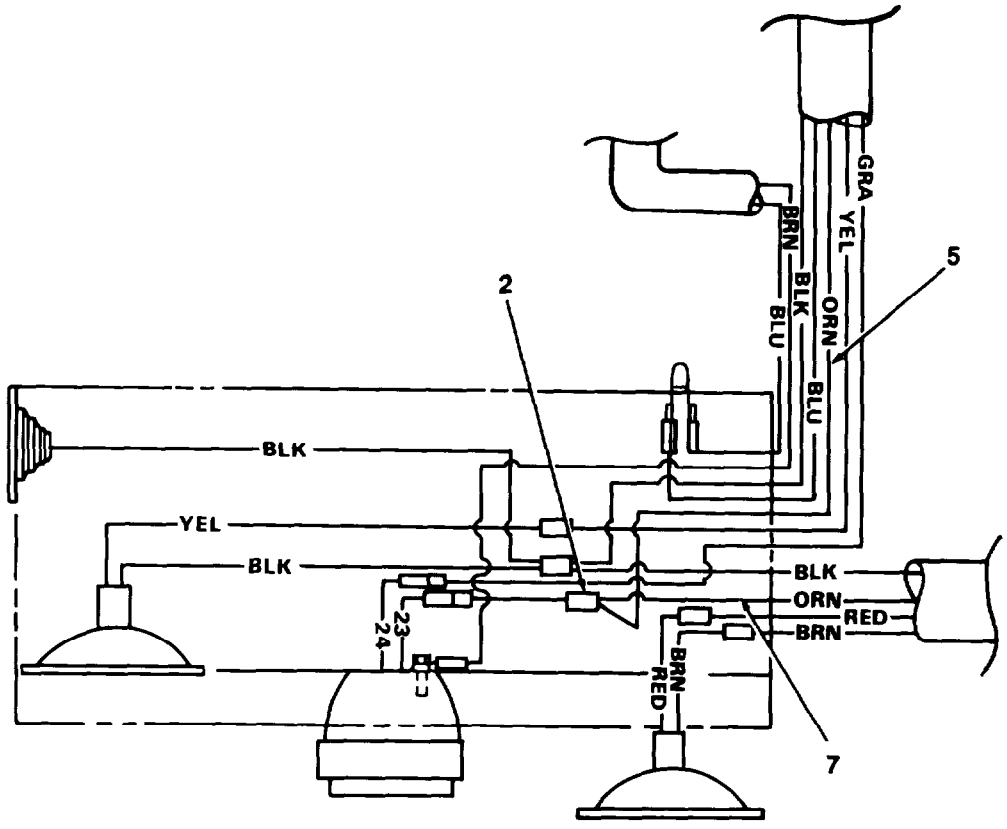
4-66. LIGHT BOX REPLACEMENT





4-66. LIGHT BOX REPLACEMENT (Con't).

(4) If on roadside, connect chassis orange wire (5) to rear conduit orange wire (7) with new connector (2). Crimp connector.



FOLLOW-ON TASKS:

- Install convoy warning light toggle switch (see paragraph 4-22).
- Install rear side clearance and marker light (see paragraph 4-26).
- Install turn signal/taillight (see paragraph 4-21).
- Install blackout light (see paragraph 4-19).
- Install stop/taillight (see paragraph 4-20).

4-67. MANHOLE AND FILL COVER MAINTENANCE.

THIS TASK COVERS

a. Replacement of Manhole Lid Gasket
b. Replacement of Fill Cover Preformed Packing
c. Replacement of Vent Assembly
d. Fill Cover Adjustment
e. Replacement of Fill Cover Adjustment Components

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-68 Tank purged.

Materials/Parts:

- One preformed packing
- Three gaskets

Tools:

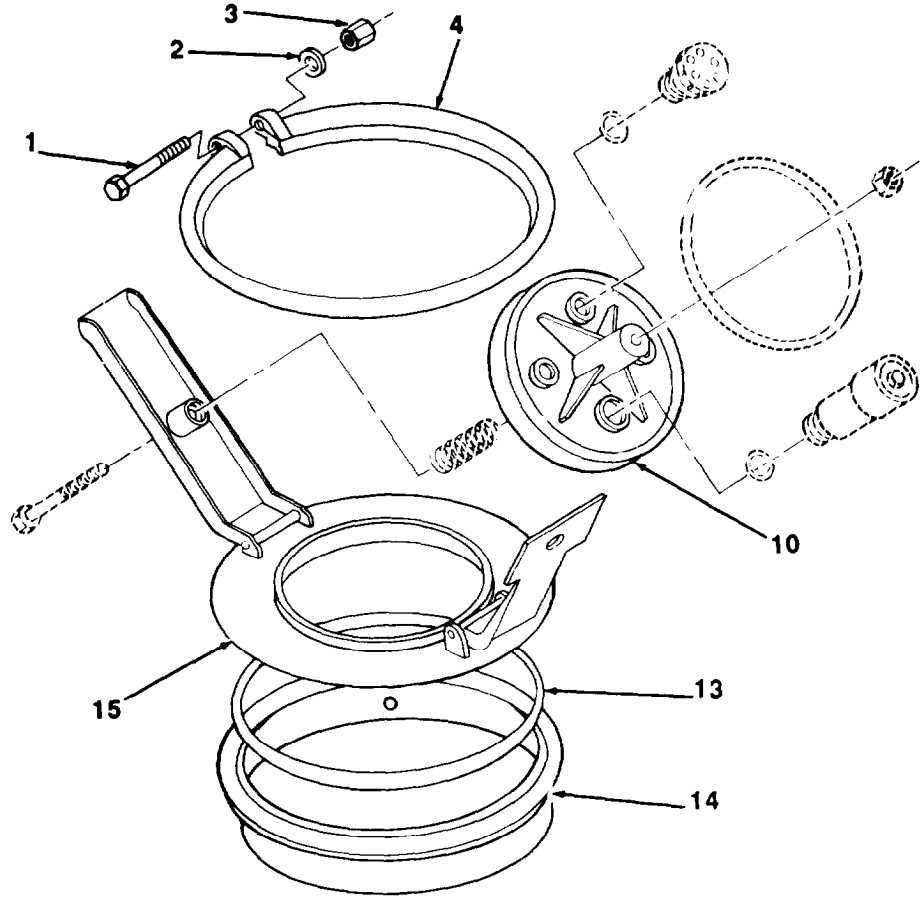
- Tool kit, general mechanic's
- Torque wrench

a. REPLACEMENT OF MANHOLE LID GASKET

(1) Open fill cover (10) (see paragraph 2-16).

(2) Remove nut (3), washer (2), and bolt (1) from clamping ring (4). Remove clamping ring and manhole lid (15) from manhole collar (14).

(3) Remove gasket (13) and discard.



4-67. MANHOLE AND FILL COVER MAINTENANCE (Con't).

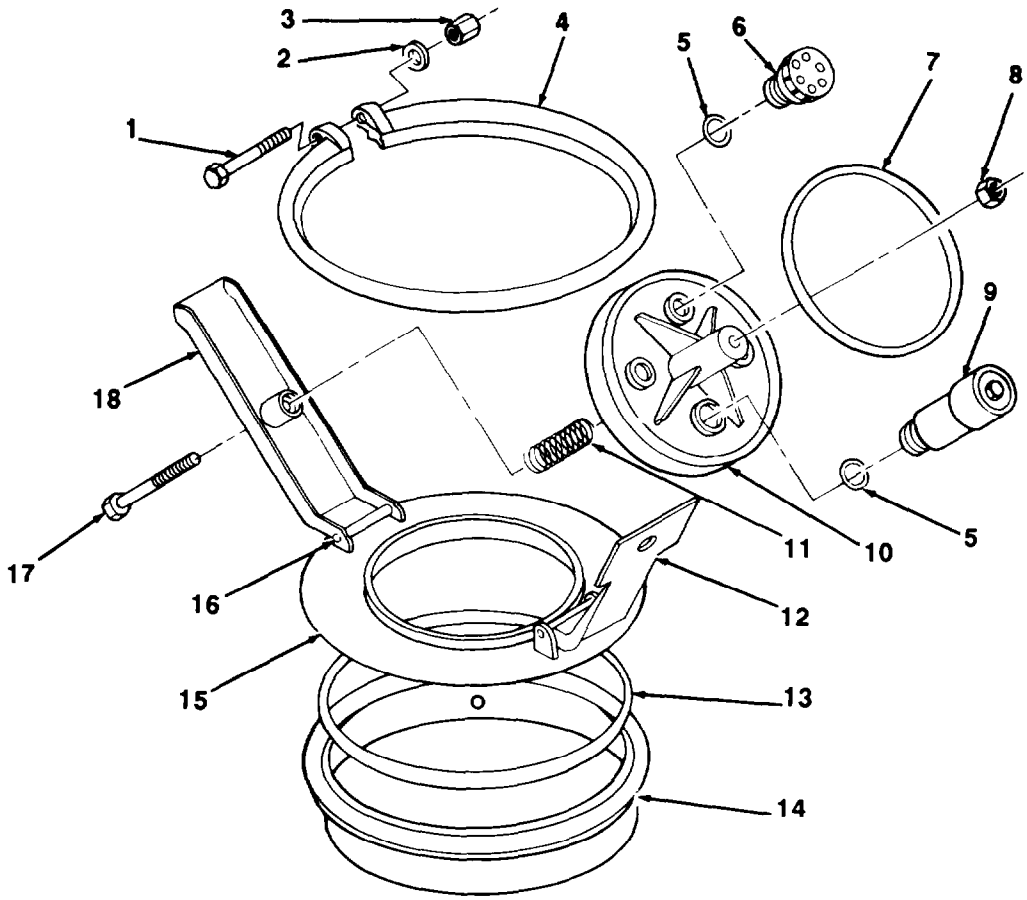
NOTE

Ensure that manhole collar (14), where gasket (13) is to be installed, is free of nicks, corrosion, or dirt.

(4) Install new gasket (13) in groove of manhole collar (14). Ensure that gasket is evenly seated.

(5) Install manhole lid (15) over manhole collar (14) with fill cover hinge (16) facing front.

(6) Install clamping ring (4), bolt (1), washer (2), and nut (3). Torque nut to 10 lb.-ft. (14 N•m). Tap around perimeter of clamping ring to ensure equal clamping, then torque nut to 25 lb.-ft. (34 N•m). Repeat if necessary.



b. REPLACEMENT OF FILL COVER PREFORMED PACKING

(1) Open fill cover (10) (see paragraph 2-16).

(2) Remove preformed packing (7) and discard.

NOTE

Ensure that fill cover (10), where preformed packing (7) is to be installed, is free of nicks, corrosion, or dirt.

(3) Install new preformed packing (7) in fill cover (10). Ensure that preformed packing is evenly seated.

(4) Close fill cover (10) (see paragraph 2-16).

4-67. MANHOLE AND FILL COVER MAINTENANCE (Con't).

c. REPLACEMENT OF VENT ASSEMBLY

NOTE

Manhole has two vent assemblies in fill cover (10): one vacuum vent (6) and one pressure/vacuum vent (9). Replacement procedures are the same.

(1) Open fill cover (10) (see paragraph 2-16).

(2) Remove vent (6 or 9) and gasket (5). Discard gasket.

NOTE

Ensure that fill cover (10), where gasket (5) is to be installed, is free of nicks, rust, or dirt.

(3) Install new gasket (5) and vent (6 or 9) in fill cover (10).

(4) Close fill cover (10) (see paragraph 2-16).

d. FILL COVER ADJUSTMENT

(1) Open fill cover (10) (see paragraph 2-16).

(2) Loosen nut (8) on underside of fill cover (10).

(3) With fill cover (10) closed, loosen or tighten bolt (17) in center of strongback (18) until latch (12) just clears the secondary latch on strongback.

(4) Open fill cover (10) and tighten nut (8), making sure that bolt (17) does not turn.

(5) Close fill cover (10) and check clearances of latch (12) and secondary latch on strongback (18).

(6) If damage is found to fill cover adjustment components, replace (see REPLACEMENT OF FILL COVER ADJUSTMENT COMPONENTS, subparagraph e).

e. REPLACEMENT OF FILL COVER ADJUSTMENT COMPONENTS

(1) Open fill cover (10) (see paragraph 2-16).

(2) Remove nut (8) from underside of fill cover (10). Remove bolt (17) from top while strongback (18) is open. Remove spring (11).

(3) Install bolt (17) through strongback (18). Position replacement spring (11) and fill cover (10) against strongback and tighten bolt.

(4) Perform step 3 of FILL COVER ADJUSTMENT, subparagraph d.

(5) Install nut (8).

(6) Close fill cover (10) (see paragraph 2-16).

4-68. PURGING TANK.

THIS TASK COVERS

a. General Information
b. Draining Tank
c. Steam Clean Purging (Preferred Method)
d. Chemical Purging (Alternate Method)

INITIAL SETUP

Materials/Parts:

- Pails
- Rags (Item 18, Appendix E)

Tools:

- Tool kit, general mechanic's
- Pipe wrench
- Steam cleaner

Test Equipment:

Nomenclature	NSN
• Combustible gas indicator set	NSN 6665-00-664-4650 or NSN 6665-00-292-9945

References:

- FM 10-20
- TB 43-0212

Personnel Required: Three

General Safety Instructions:

- DO NOT perform draining or purging operations in an electrical storm.
- Connect bonding and grounding connection before beginning draining and purging operations. Maintain bonding and grounding connection until after all draining and purging is completed.
- Keep open flames or other sources of ignition away from area where draining or purging operation is in progress. Sufficient fire extinguishers MUST be present and manned.

General Safety Instructions (Con't):

- When working inside tank, always provide adequate air ventilation at the manhole opening with air directed into compartment where work is being performed.
- NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations.
- In an emergency, personnel entering tank which is not vapor free must wear an attached lifeline and protective respiratory equipment. Personnel MUST NOT enter a tank which is in the explosive range.
- Give IMMEDIATE medical attention to personnel exposed to hydrocarbon or toxic vapors.
- Personnel engaged in draining and purging operations must wear prescribed clothing. Before climbing onto semitrailer, grasp static ground wire to discharge all static from body.
- If semitrailer is left overnight after purging, retest with combustible gas indicator set to ensure a SAFE reading.
- Compressed air used for drying tubing must not exceed 30 psi (207 kPa).

a. GENERAL INFORMATION

(1) Removal of combustible vapors and liquids requires a coordinated effort of properly skilled safety and maintenance personnel. This maintenance procedure is to be performed by authorized unit or direct support personnel with an MOS of 77F or equivalent.

(2) A thorough reading of FM 10-20 and TB 43-0212 is essential for understanding proper draining and purging methods.

4-68. PURGING TANK (Con't).

b. DRAINING TANK

WARNING

- **DO NOT perform draining operations in an electrical storm or if a storm is threatening. Keep open flames or other sources of ignition, such as welding and cutting torches and ordinary electrical equipment, away from area where draining operation is in progress. Sufficient fire extinguishers MUST be present and manned. Failure to follow this warning will result in serious injury or death to personnel.**
- **Connect bonding and grounding connection before beginning draining operations. Maintain bonding and grounding connection until after all draining is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel.**
- **Personnel engaged in draining operations must not wear wool, nylon, silk, rayon, or other clothing that generates static electricity. Wear clean cotton clothing with no metal zippers. Remove all contents from pockets. Wear rubber boots and gloves to keep fuel off skin. Use cotton cloths for cleaning purposes. Before climbing onto semitrailer, grasp static ground wire to discharge all static from body.**
- **Give IMMEDIATE medical attention to personnel exposed to hydrocarbon or toxic vapors. Signs of distress are weakness, nausea, coughing or intoxication, nosebleed or cramps, or other unusual symptoms. Qualified personnel able to administer artificial respiration and simple first aid must be present.**

(1) Park semitrailer 100 ft. (30.5 m) from any building, source of ignition, or sewer system. Raise front of semitrailer by lowering landing gear enough to maintain tank sump at the lowest position. Close all windows and doors of nearby buildings to prevent flow of vapors into areas where flame and other sources of ignition may exist.

(2) Uncouple tractor from semitrailer (see paragraph 2-14).

(3) Connect bonding and grounding connection (see paragraph 2-17).

(4) Place sufficient fire extinguishers 50 ft. (15.25 m) upwind and attend with qualified personnel.

(5) Place conductive metal or galvanized pail under strainer assembly (see paragraph 1-15). Ground pail to tank and to semitrailer's common ground. Remove ¼ in. (6.4 mm) center plug from strainer assembly and allow all fuel to drain.

4-68. PURGING TANK (Con't).

(6) Place conductive metal or galvanized pails under drain points: front port (1) and sump drain (8). Ground pails to tank and to semitrailer's common ground.

(7) Pull sump drain control lever to drain all fluid from sump drain (see paragraph 2-2). Remove front port (1) dust cap and open butterfly valve (2) (see paragraph 2-2).

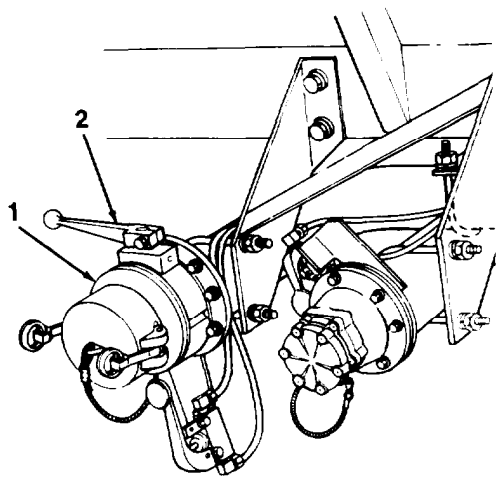
NOTE

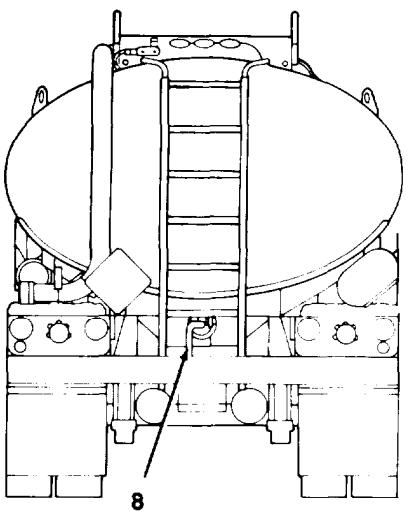
Steps 8 and 9 must be performed to drain as much fuel as possible from emergency valve. Even after these steps have been performed, there will be approximately 3-4 cc of fuel remaining inside piston cavity of emergency valve.

(8) Drain fuel from emergency valve through front port (1) by pulling on emergency valve control lever in cabinet. After 10 seconds, push on control lever to close (see paragraph 2-2).

(9) Repeat procedure in step 8 three more times to drain as much fuel from emergency valve as possible.

(10) Wipe dry all spilled fuel. Wash, dry, and store any cloths or mops used, or dispose of them in accordance with local policy.





4-68. PURGING TANK (Con't).

c. STEAM CLEAN PURGING (PREFERRED METHOD)

WARNING

- **DO NOT perform purging operations in an electrical storm or if a storm is threatening. Keep open flames or other sources of ignition, such as welding and cutting torches and ordinary electrical equipment, away from area where purging operation is in progress. Sufficient fire extinguishers must be present and manned. Failure to follow this warning will result in serious injury or death to personnel.**

- **Connect bonding and grounding connection before beginning purging operations. Maintain bonding and grounding connection until after all purging is completed. DO NOT connect semitrailer grounding cable to semitrailer grounding stud. Connections must be made to clean, unpainted surfaces. An unbonded and ungrounded or improperly bonded and grounded semitrailer could produce a spark. The resulting explosion will cause serious injury or death to personnel.**

- **Personnel engaged in purging operations must not wear wool, nylon, silk, rayon, or other clothing that generates static electricity. Wear clean cotton clothing with no metal zippers. Remove all contents from pockets. Wear rubber boots and gloves to keep fuel off skin. Use cotton cloths for cleaning purposes. Before climbing onto semitrailer, grasp static ground wire to discharge all static from body.**

- **Give IMMEDIATE medical attention to personnel exposed to hydrocarbon or toxic vapors. Signs of distress are weakness, nausea, coughing or intoxication, nosebleed or cramps, or other unusual symptoms. Qualified personnel able to administer artificial respiration and simple first aid must be present.**

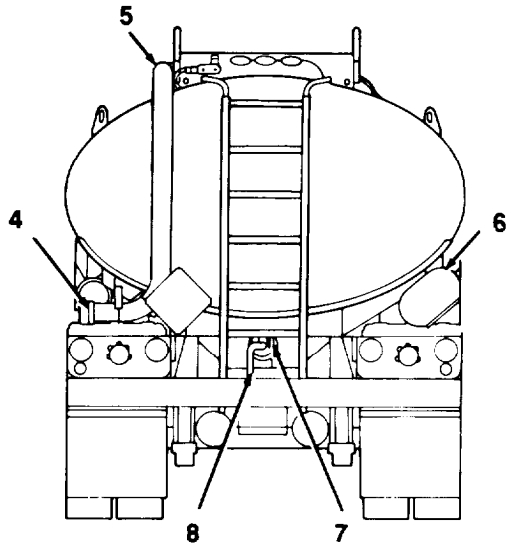
- **Should an emergency arise requiring entry into a tank which is not vapor-free, or which has an oxygen content less than 19.5%, personnel entering must have an attached lifeline and wear protective respiratory equipment in the form of self-contained breathing apparatus or a full facepiece mask with a pressure supply of breathable air. Another person, also provided with respiratory equipment, MUST be stationed at manhole opening and remain there with full ability to watch personnel inside tank and summon assistance in the event a rescue operation is needed. Personnel MUST NOT enter a tank which is in the explosive range.**

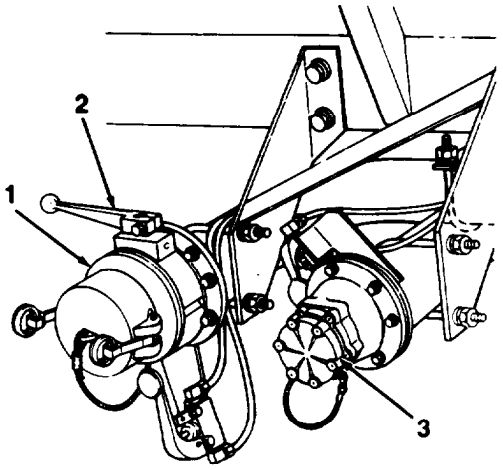
- **If semitrailer is left overnight after purging procedure, retest with combustible gas indicator set to ensure a SAFE reading. Tanks may recharge themselves with seepage of undetected pockets of vapors. Failure to follow this warning may result in serious injury or death to personnel.**

(1) Ground semitrailer to steam cleaner. Ensure that semitrailer bonding and grounding connection is made (see paragraph 2-17).

4-68. PURGING TANK (Con't).

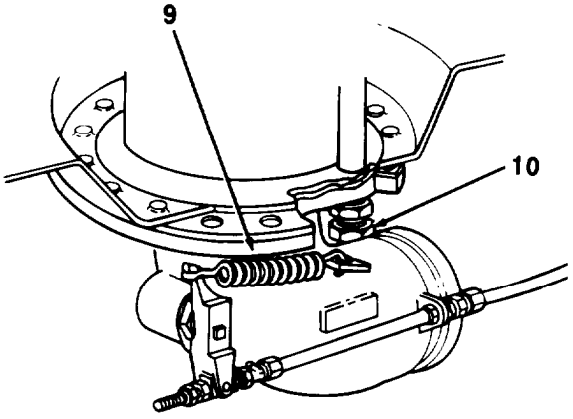
(2) Remove dust cap from rear roadside vapor collection adapter (4). Remove dust cap from front port (1). Open butterfly valve (2) (see paragraph 2-2). Remove cover from rear inlet (3) and place a wedge of wood against diaphragm plate to open rear inlet adapter.





(3) Inside cabinet, pull emergency valve and vapor vent control levers to open (see paragraph 2-2).

(4) Pull on sump drain control lever (7) to open sump drain (8). Prop control lever open with a block of wood. Remove nut (10) from bleeder valve at emergency valve (9) under rear of semitrailer.



(5) Remove ¼ in. (6.4 mm) center plug from strainer assembly (see paragraph 1-15).

(6) Place conductive metal or galvanized pails under following drain points: front port (1) and sump drain (8). Ground pails to semitrailer and to semitrailer's common ground (see paragraph 2-17).

4-68. PURGING TANK (Con't).

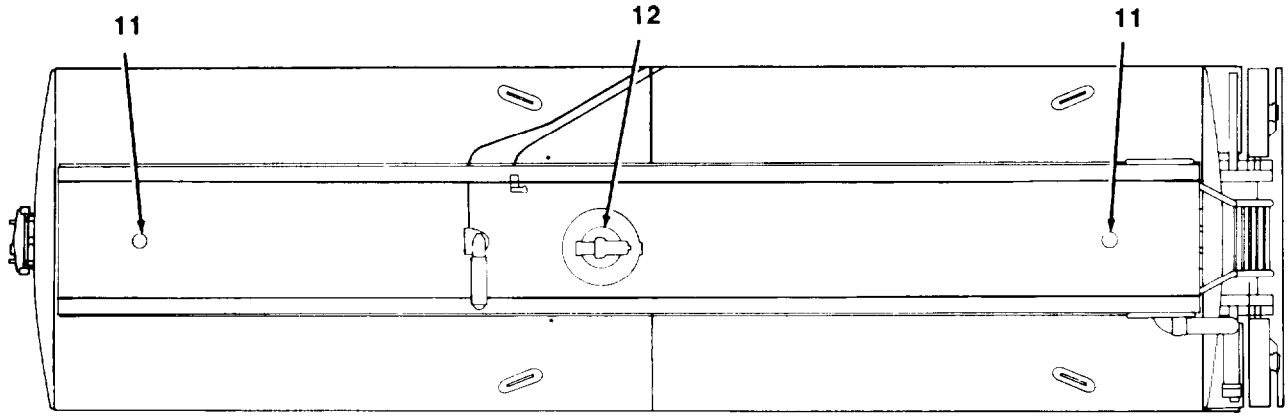
(7) Open manhole fill cover (12) (see paragraph 2-16).

(8) Remove two vent caps (11).

CAUTION

Ensure that steam does not come in contact with electrical wiring and other tank components. Heat from steam can damage painted surface of tank, can weaken fusible plugs, and damage valve seats, gaskets, and diaphragms. Failure to follow this caution may result in damage to electrical wiring and other tank components.

(9) Introduce steam through two vent cap (11) openings and manhole opening in sufficient volume to raise temperature of tank interior to 170°F (76°C).



(10) Remove transfer hoses from curbside hose and gage stick tube assembly (6). Introduce steam into tube assembly.

(11) Steam tank and vapor collection system for at least three hours. Turn off steam source.

CAUTION

After purging, keep manhole fill cover (12) open during cool-down to prevent vacuum collapse of tank.

(12) Leave all openings open until tank is fully cooled, at least one hour.

(13) Use combustible gas indicator set to test air inside tank, vapor collection return line (5), front port (1), and hose and gage stick tube assembly (6) (see FM 10-20). If reading indicates tank is not safe, resume steam cleaning for 1 hour, then retest.

4-68. PURGING TANK (Con't).

WARNING

- **NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**

(14) If repair to tank is scheduled, emergency valve must be removed at this time (see paragraph 4-82), Even with tank drained and purged, approximately 3-4 cc of fuel remain inside piston cavity of emergency valve. Vapor will continue to escape from emergency valve and create a safety hazard,

WARNING

Compressed air used for drying tubing must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

(15) Open precheck valve inside cabinet (see paragraph 2-2). From outside tank, disconnect precheck tubing from check valve, elbows at piping assembly, and pressure gage (see paragraph 4-72). Allow any fuel inside tubing to drain. Force compressed air through tubing lo dry tubing. Thoroughly wipe up any fuel that drains.

(16) Enter tank when it tests SAFE and remove jet level sensor (see paragraph 4-70).

(17) Allow all fuel to drain from precheck and jet level sensor tubing. Force compressed air through tubing lo dry tubing. Thoroughly wipe up any fuel that drains.

(18) Retest with combustible gas indicator set (see FM 10-20). Resteam as required until a SAFE reading is obtained.

(19) Connect precheck tubing to pressure gage, elbows at piping assembly, and check valve (see paragraph 4-72). Close precheck valve (see paragraph 2-2).

(20) Install jet level sensor and connect precheck and jet level sensor tubing at jet level sensor end (see paragraph 4-70).

(21) After purging and obtaining a SAFE reading with combustible gas indicator set, disconnect all bonding and grounding connections (see paragraph 2-17).

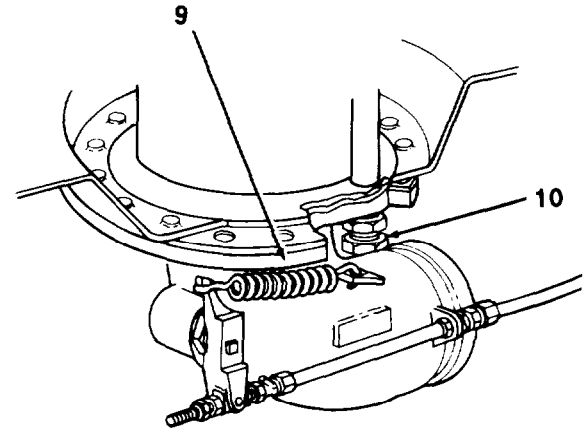
(22) Remove all pails at drain points and dispose of contents in accordance with local policy.

(23) Semitrailer is ready for tank inspection or repair, a change in material, or shipment, as applicable. Tank is also safe to be brought inside **a** building for maintenance.

4-68. PURGING TANK (Con't).

(24) Even if semitrailer has tested SAFE with combustible gas indicator set, it must be retested prior to starting work each day and at regular intervals throughout the day.

(25) If removed, install emergency valve (9) (see paragraph 4-82). If removed, install nut (10) to bleeder valve.



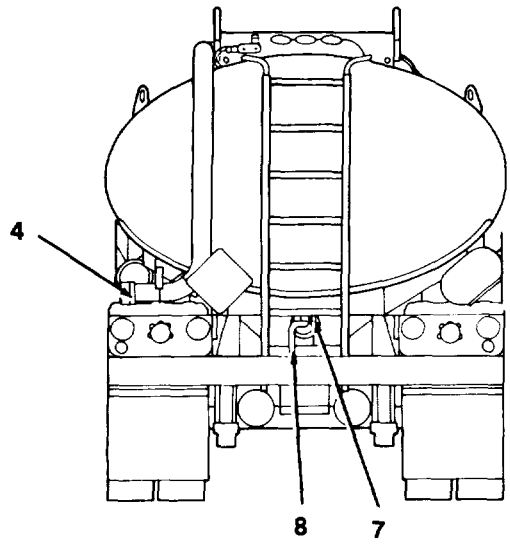
CAUTION

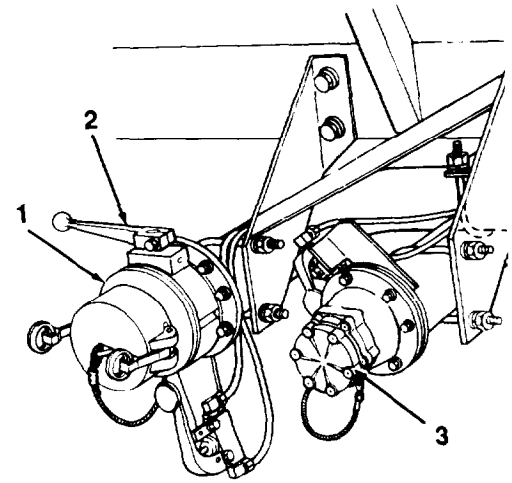
Purging introduces water into semitrailer's bottom loading system. Winterization is needed to prevent freezing and damage to bottom loading system. If freeze-up occurs, semitrailer will not bottom load.

(26) After work is complete, and before loading fuel or shipping, winterize bottom loading system (see paragraph 4-84).

(27) Install dust caps to rear roadside vapor collection adapter (4) and front port (1). Close rear inlet (3) cover and butterfly valve (2). Push on sump drain control lever (7) to close tank sump (8).

(28) Install ¼ in. (6.4 mm) center plug in strainer assembly (see paragraph 1-15).

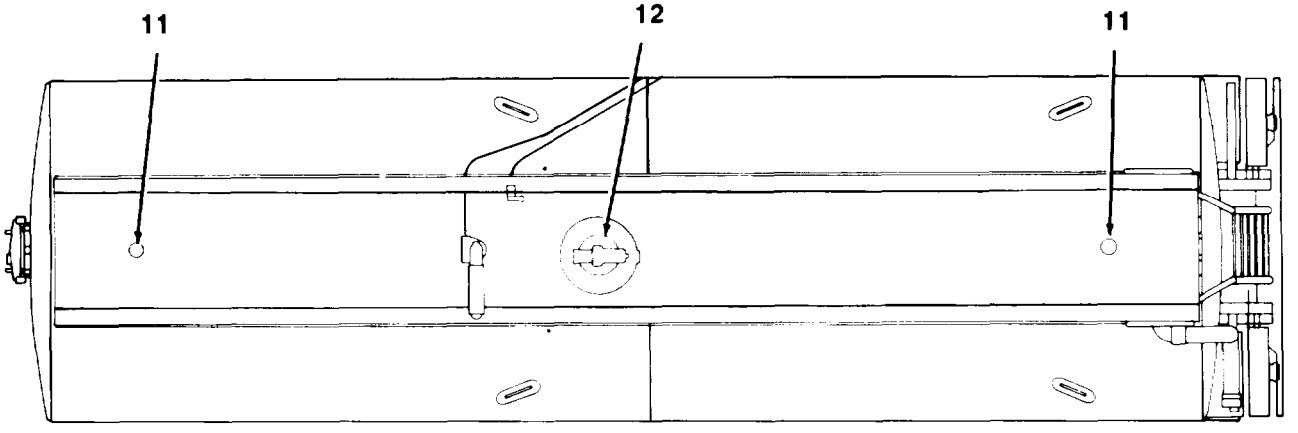




4-68. PURGING TANK (Con't).

(29) Push emergency valve and vapor vent control levers in cabinet to close (see paragraph 2-2).

(30) Close two vent caps (11). Close manhole fill cover (12) (see paragraph 2-16).



d. CHEMICAL PURGING (ALTERNATE METHOD)

WARNING

DO NOT perform chemical purging unless TB 43-0212 has been thoroughly read, understood, and all safety procedures followed.

(1) Refer to TB 43-0212 for information on chemical purging.

(2) If repair to tank is scheduled, remove emergency valve after purging (see paragraph 4-82). Even with tank drained and purged, approximately 3-4 cc of fuel remain inside piston cavity of emergency valve and create a safety hazard.

(3) Follow instructions in subparagraph c, STEAM CLEAN PURGING, to dry precheck and jet level sensor tubing.

(4) When emergency valve is installed after tank repair is complete, winterize bottom loading system (see paragraph 4-84).

Section XII. DATA PLATES

Paragraph Number	Title	Page Number
4-69	Data Plate Replacement	4-213

4-69. DATA PLATE REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Tools:

- Tool kit, general mechanic's
- Hand drill
- Rivet gun
- Side cutters

Materials/Parts:

- Four rivets

4-69. DATA PLATE REPLACEMENT (Con't).

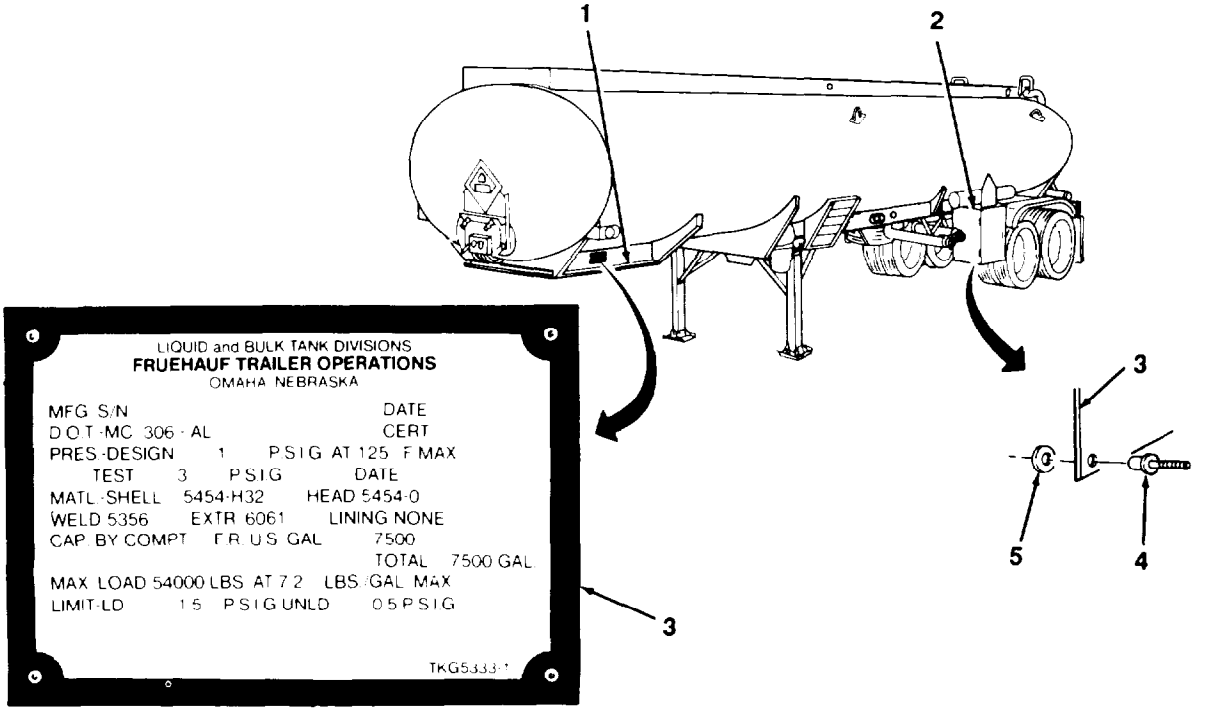
a. REMOVAL

WARNING

DO NOT drill out rivets (4) if removing a data plate (3) from inside cabinet (2). Cabinet is made of steel. Drilling a rivet from steel can produce a spark which may cause an explosion and fire. Failure to follow this warning may result in serious injury or death to personnel.

(1) If removing a data plate (3) inside cabinet (2) use side cutters to remove four rivets (4). If removing a data plate from aluminum framerail (1) at upper coupler assembly, use a hand drill to drill out four rivets. Discard rivets.

(2) Replace data plate (3).



b. INSTALLATION

NOTE

For location of all data plates (3), refer to paragraph 1-9.

(1) Position data plate (3).

NOTE

Rivets (4) used on data plates (3) inside cabinet (2) are installed with washers (5).

(2) Use a rivet gun to install data plate (3) with four new rivets (4).

Section XIII. NONELECTRICAL GAGES MAINTENANCE

Paragraph Number	Title	Page Number
4-70	Jet Level Sensor Replacement	4-215
4-71	Strainer Assembly Maintenance	4-222
4-72	Precheck System Maintenance	4-225
4-73	Gage Marker Disk and Ground Wire Replacement	4-238

4-70. JET LEVEL SENSOR REPLACEMENT.

THIS TASK COVERS

a. Removal of Jet Level Sensor
b. Installation of Jet Level Sensor
c. Removal of Jet Level Sensor Tubing and Fittings
d. Installation of Jet Level Sensor Tubing and Fittings

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-68 Tank purged.
4-67 Manhole lid removed.

Materials/Parts:

- Tag marker (Item 21, Appendix E)
- Antiseize tape (Item 22, Appendix E)

Tools:

- Tool kit, general mechanic's

General Safety Instructions:

- When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed.
- NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations.

4-70. JET LEVEL SENSOR REPLACEMENT (Con't).

a. REMOVAL OF JET LEVEL SENSOR

WARNING

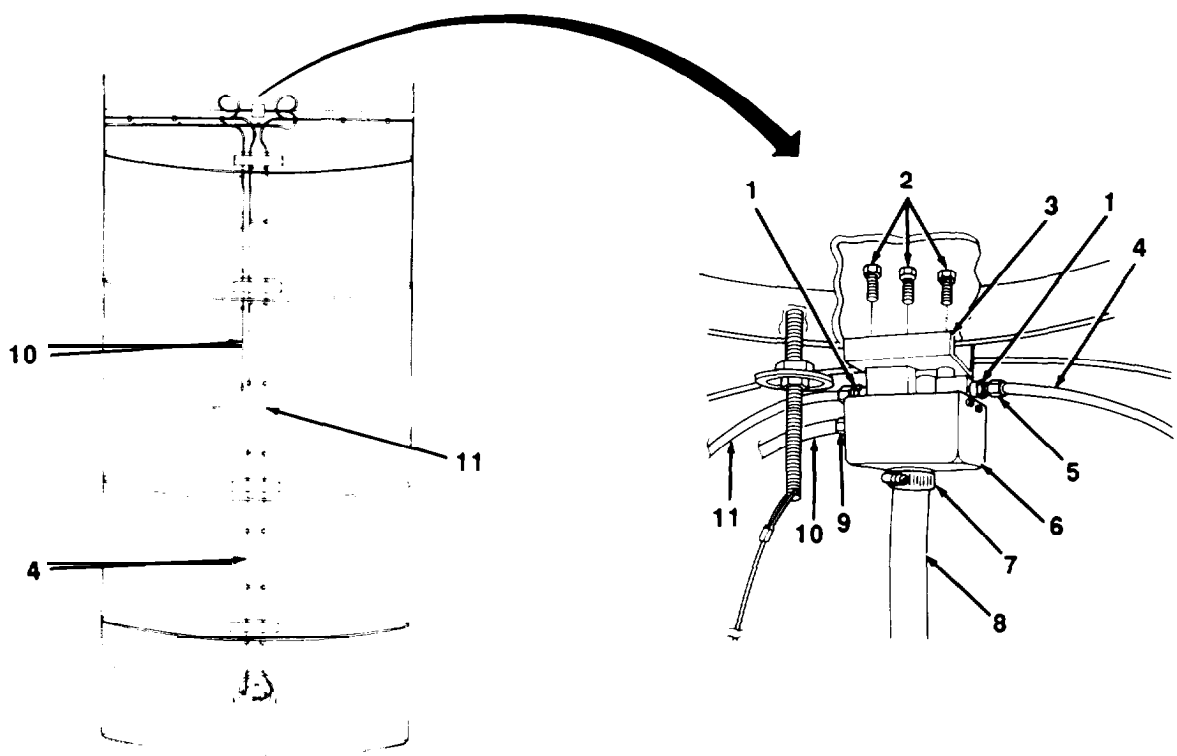
- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank: a second person must be stationed at the manhole opening.The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

NOTE

- **If disconnecting precheck tubing (10) from jet level sensor (6), perform step 1.**
- **Tag tubing (4, 10, and 11) for installation.**

(1) Loosen nut (9) and disconnect precheck tubing (10) from jet level sensor (6),

(2) Loosen two nuts (5) and disconnect tubing (4 and 11) from jet level sensor (6).



4-70. JET LEVEL SENSOR REPLACEMENT (Con't).

(3) Remove three bolts (2) jet level sensor (6), and shield from mounting channel (3).

(4) Remove clamp (7) and tubing (8) from jet level sensor (6).

(5) Remove two straight adapters (1) from jet level sensor (6).

b. INSTALLATION OF JET LEVEL SENSOR

WARNING

- When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.
- NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.

NOTE

- **If connecting precheck tubing (10) to jet level sensor (6), perform step 5.**
- **All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**

(1) Install two straight adapters (1) to jet level sensor (6).

(2) Install jet level sensor (6) and shield to mounting channel (3) with three bolts (2).

(3) Connect tubing (4 and 11) to straight adapters (1) and tighten two nuts (5).

(4) Install tubing (8) to jet level sensor (6) with clamp (7).

(5) Connect precheck tubing (10) to jet level sensor (6) and tighten nut (9).

4-70. JET LEVEL SENSOR REPLACEMENT (Con't).

c. REMOVAL OF JET LEVEL SENSOR TUBING AND FITTINGS

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**

- **NEVER work alone Inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

NOTE

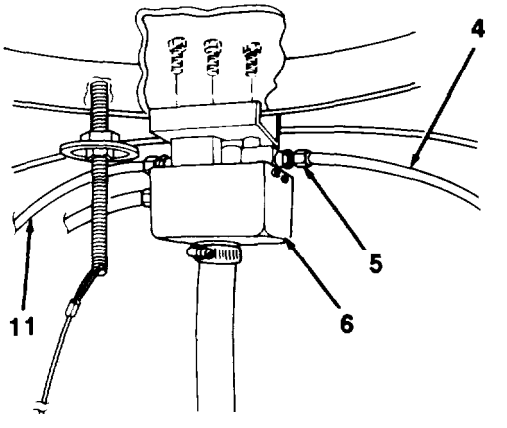
Tag all tubing at jet level sensor (6), emergency valve (12), and strainer assembly (24) for Installation.

(1) At emergency valve (12) under semitrailer, remove tubing (23) from between straight adapter (22) and outlet of strainer assembly (24). Remove tubing (25) from between straight adapter (26) and inlet of strainer assembly.

(2) Remove straight adapters (22 and 26) and bleeder valve (27) from emergency valve (12).

(3) Loosen nuts (5) and disconnect tubing (4 and 11) from jet level sensor (6).

(4) Inside tank at emergency valve (12), loosen nuts at straight adapters (15 and 19) and disconnect tubing (4 and 11).

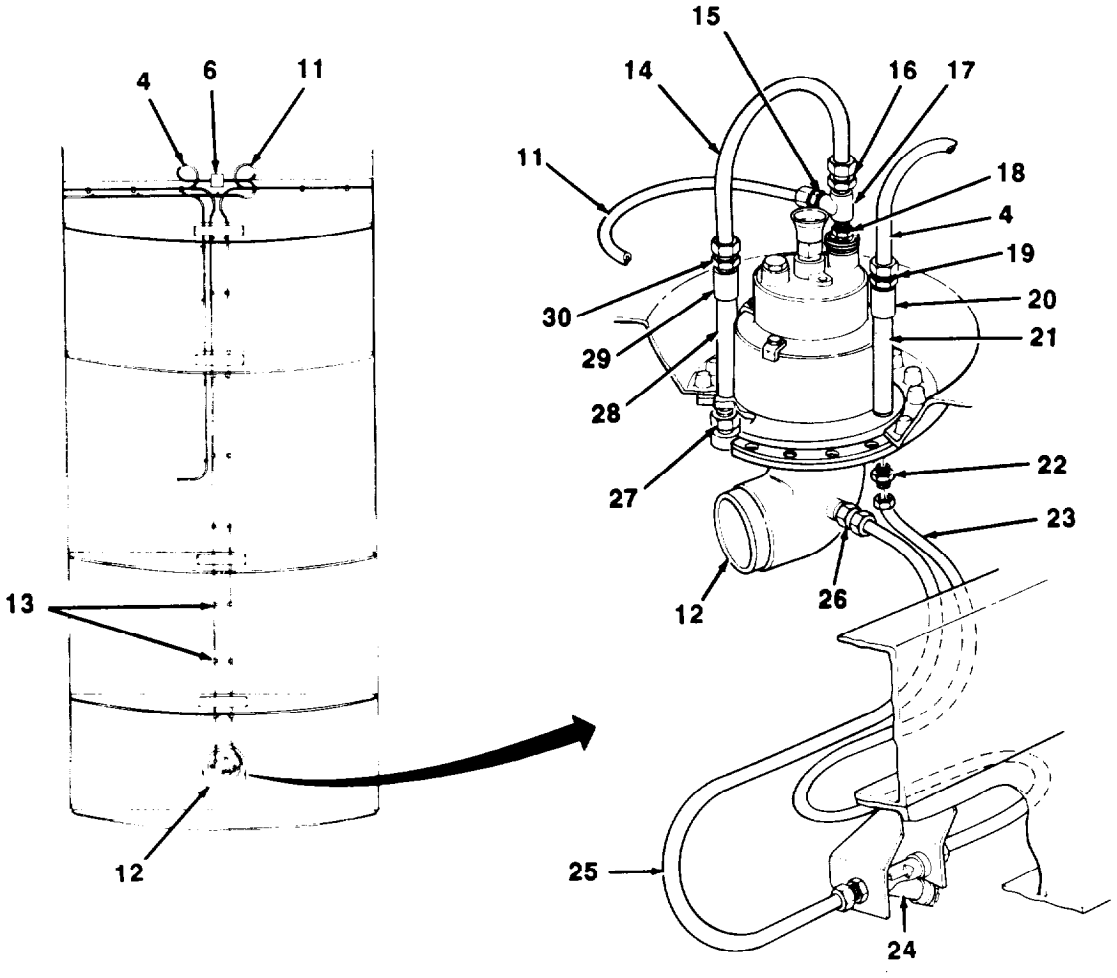


CAUTION

Use caution when releasing tubing (4 and 11) from under clips (13). Clips should be lifted gently and only enough to release tubing. Improper handling of clips will cause them to break.

(5) Remove tubing (4 and 11) from clips (13). Remove tubing from between emergency valve (12) and jet level sensor (6).

4-70. JET LEVEL SENSOR REPLACEMENT (Con't).



(6) Remove straight adapter (19) coupling (20), and nipple (21).

(7) Remove tubing (14) from straight adapters (16 and 30).

(8) Remove straight adapter (30), coupling (29), and nipple (28).

(9) Remove straight adapters (15 and 16) from tee (17). Remove tee, bushing, and nipple from pilot valve (18).

4-70. JET LEVEL SENSOR REPLACEMENT (Con't).

d. INSTALLATION OF JET LEVEL SENSOR TUBING AND FITTINGS

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**
- **All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**

(1) Install nipple, bushing, and tee (17) to pilot valve (18). Install straight adapters (15 and 16) to tee.

(2) Install nipple (28), coupling (29), and straight adapter (30).

(3) Install tubing (14) between straight adapters (16 and 30).

(4) Install nipple (21), coupling (20), and straight adapter (19).

CAUTION

Use caution when securing tubing (4 and 11) under clips (13). Improper handling of clips will cause them to break.

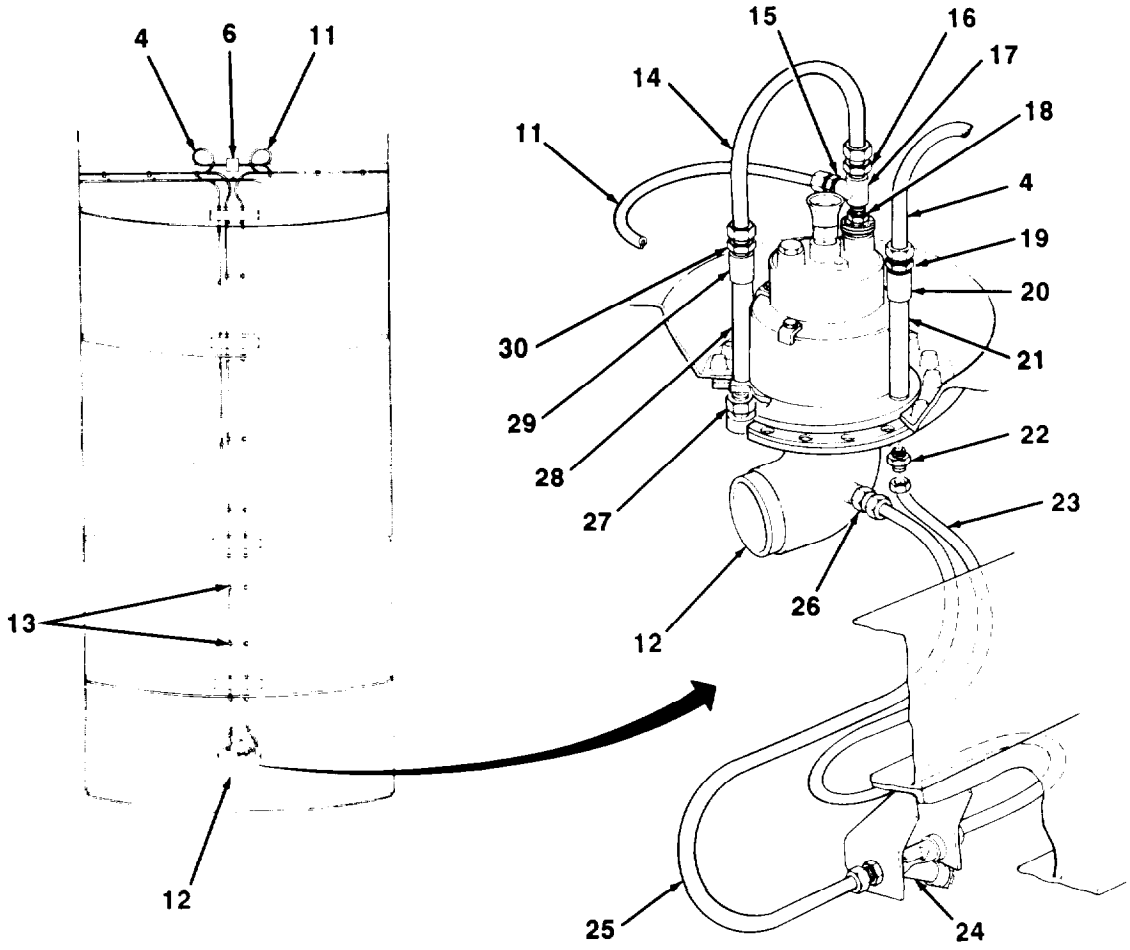
(5) Position tubing (4 and 11) between emergency valve (12) and jet level sensor (6). Allow a 6-12 in. (15.2-30.5 cm) slack loop in tubing at emergency valve and jet level sensor. Secure tubing with clips (13). Use a soft-faced hammer to gently tap clips back into position.

NOTE

Install all tubing at jet level sensor (6), emergency valve (12), and strainer assembly (24) as tagged.

(6) At emergency valve (12), connect tubing (4 and 11) to straight adapters (15 and 19).

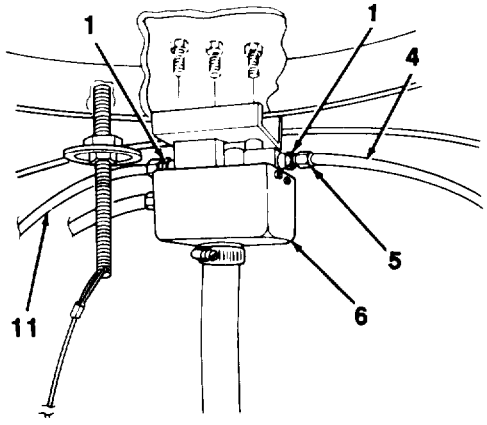
4-70. JET LEVEL SENSOR REPLACEMENT (Con't)



(7) At jet level sensor (6), connect tubing (4 and 11) to straight adapters (1) and tighten nuts (5).

(8) Install straight adapters (22 and 26) and bleeder valve (27) to emergency valve (12).

(9) Install tubing (25) between straight adapter (26) and inlet of strainer assembly (24). Install tubing (23) between straight adapter (22) and outlet of strainer assembly.



FOLLOW-ON TASKS:

Install manhole lid (see paragraph 4-67).

4-71. STRAINER ASSEMBLY MAINTENANCE.

THIS TASK COVERS

a. Service
b. Removal
c. Disassembly
d. Cleaning and Inspection
e. Assembly
f. Installation

INITIAL SETUP

Materials/Parts:

- One gasket
- Dry cleaning solvent (Item 10, Appendix E)
- Rags (Item 18, Appendix E)
- Antiseize tape (Item 22, Appendix E)

Tools:

- Tool kit, general mechanic's
- Pail
- 14 in. pipe wrench

Personnel Required: Two

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- Compressed air used for drying purposes must not exceed 30 psi (207 kPa).

a. SERVICE

NOTE

Assistance may be required to perform step 1.

(1) Place a pail under strainer assembly. Hold body (10) with pipe wrench. Remove cap (6) and gasket (8) from body and allow all fuel to drain. Dispose of fuel in accordance with local policy.

(2) Remove screen (9) from body (10).

WARNING

- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.**

- **Compressed air used for drying purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.**

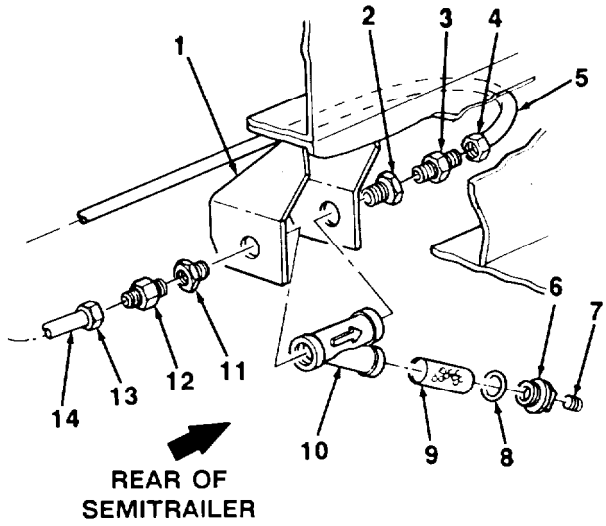
(3) Use dry cleaning solvent to clean screen (9). Dry screen thoroughly with compressed air. Use a clean rag dipped in dry cleaning solvent to wipe any dirt or contaminants from inside body (10).

(4) Inspect gasket (8) for damage. Replace gasket if damaged.

4-71. STRAINER ASSEMBLY MAINTENANCE (Con't).

(5) Install screen (9) inside body (10).

(6) Install new gasket (8) and cap (6) on body (10). Hold body with pipe wrench and tighten cap securely.



b. REMOVAL

(1) Place a pail under strainer assembly to catch any draining fuel when tubing (5 and 14) is disconnected.

(2) Loosen nut (13) and disconnect tubing (14) from straight adapter (12). Loosen nut (4) and disconnect tubing (5) from straight adapter (3). Dispose of any fuel collected in pail in accordance with local policy.

(3) Hold body (10) with pipe wrench and remove bushings (2 and 11) from body. Remove body from between mounting brackets (1).

(4) Remove straight adapters (3 and 12) from bushings (2 and 11).

c. DISASSEMBLY

(1) Remove cap (6) and gasket (8) from body (10). Remove plug (7) from cap.

(2) Remove screen (9) from body (10).

d. CLEANING AND INSPECTION

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzywhile using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

Compressed air used for drying purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and usecaution to avoid injury to personnel.

(1) Use dry cleaning solvent to clean all removed components. Dry thoroughly with compressed air.

4-71. STRAINER ASSEMBLY MAINTENANCE (Con't).

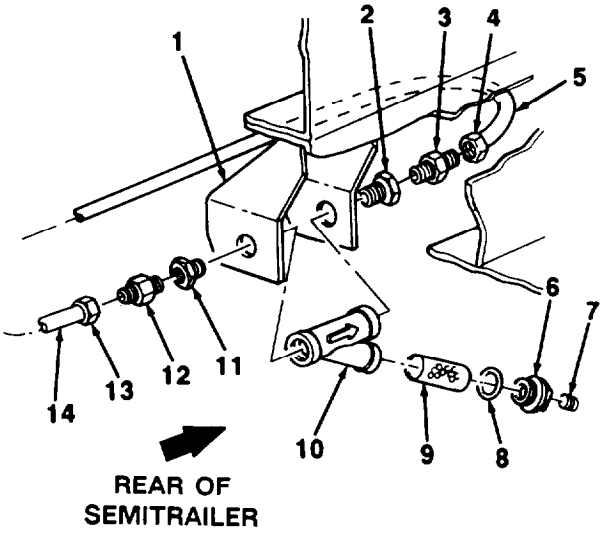
(2) Inspect all components for cracks, breaks, distortion, or damaged threads.

(3) Replace any damaged component.

e. ASSEMBLY

(1) Install screen (9) inside body (10).

(2) Apply antiseize tape to threads of plug (7). Install plug in cap (6). Install gasket (8) and cap on body (10), and tighten securely.



f. INSTALLATION

NOTE

- **All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **Ensure that strainer assembly is installed with directional arrow on body (10) facing rear of semitrailer.**

(1) Install straight adapters (3 and 12) to bushings (2 and 11).

(2) Position body (10) between mounting brackets (1). Install bushings (2 and 11) to body through holes in mounting bracket.

(3) Connect shorter tubing (14) coming from emergency valve elbow to straight adapter (12) at inlet of body (10). Tighten nut (13). Connect longer tubing (5) going to underside of tank to straight adapter (3) at outlet of body. Tighten nut (4).

4-72. PRECHECK SYSTEM MAINTENANCE.

THIS TASK COVERS

a. Removal of Precheck Valve
b. Installation of Precheck Valve
c. Removal of Pressure Gage
d. Installation of Pressure Gage
e. Removal of Check Valve
f. Installation of Check Valve
g. Removal of Precheck Tubing
h. Installation of Precheck Tubing

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged if replacing precheck system components inside tank.

Materials/Parts:

- Two lockwashers
- Three elbows
- Three grommets
- Grease (Item 12, Appendix E)
- Rags (Item 18, Appendix E)
- Antiseize tape (Item 22, Appendix E)

Tools:

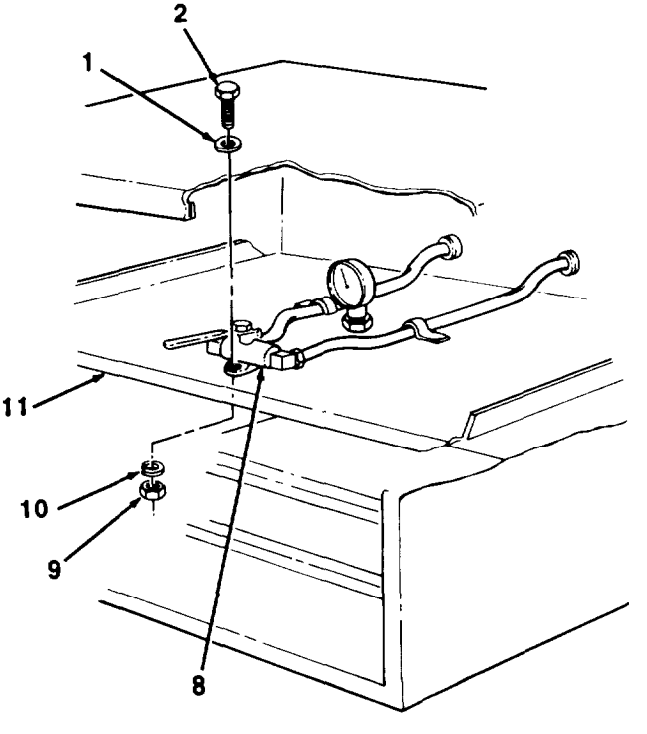
- Tool kit, general mechanic's
- Drain pan

General Safety Instructions:

- When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment' where work is being performed.
- NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations.

a. REMOVAL OF PRECHECK VALVE

(1) Remove two nuts (9) lockwashers (10), screws (2), and washers (1) and remove precheck valve (8) from mounting to shelf of cabinet (11). Discard lockwashers.



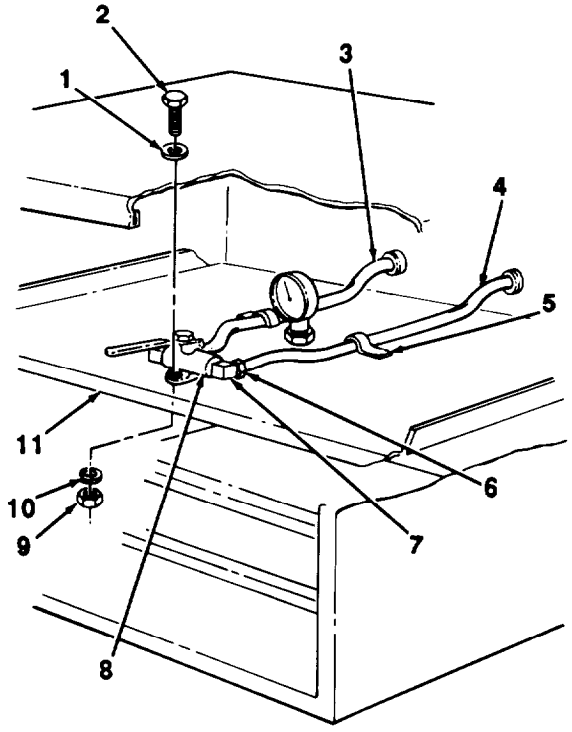
4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

CAUTION

Use caution when releasing tubing (3 and 4) from under clips (5). Clips should be lifted gently and only enough to release tubing. Improper handling of clips will cause them to break.

(2) Release tubing (3 and 4) from under clips (5). Place a suitable drain pan under precheck valve (8) and tubing. Loosen nuts (6) and disconnect tubing from two elbows (7). Dispose of any drained fuel in accordance with local policy. Ensure that any spilled fuel is wiped up.

(3) Remove two elbows (7) from precheck valve (8).



b. INSTALLATION OF PRECHECK VALVE

NOTE

All male threads of elbows (7) should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Install two elbows (7) to precheck valve (8).

(2) Connect tubing (3 and 4) to elbows (7) and tighten nuts (6).

(3) Install precheck valve (8) to shelf of cabinet (11) with two washers (1), screws (2) new lockwashers (10), and nuts (9).

CAUTION

Use caution when securing tubing (3 and 4) under clips (5). Improper handling of clips will cause them to break.

(4) Secure tubing (3 and 4) with clips (5). Use a soft-faced hammer to gently tap clips back into position.

c. REMOVAL OF PRESSURE GAGE

(1) Place a suitable drain pan under elbow (16). Loosen nut (15) and disconnect tubing (14) from elbow. Dispose of any drained fuel in accordance with local policy. Ensure that any spilled fuel is wiped up.

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

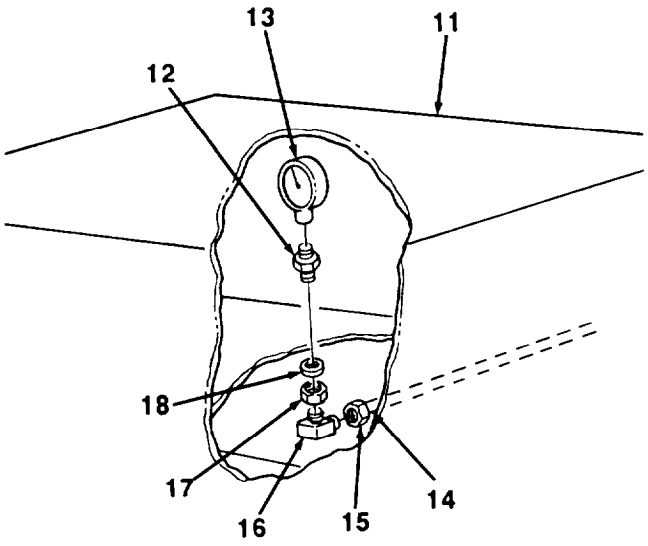
CAUTION

Use caution not to damage pressure gage (13).

(2) Hold terminal bolt (12) and remove elbow (16).

(3) Remove nut (17) and starwasher (18). Remove terminal bolt (12) and pressure gage (13) from cabinet (11) .

(4) Remove terminal bolt (12) from pressure gage (13).



d. INSTALLATION OF PRESSURE GAGE

NOTE

All male threads of elbow (16) and terminal bolt (12) should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Install terminal bolt (12) to pressure gage (13).

CAUTION

Use caution not to damage pressure gage (13).

(2) Install terminal bolt (12) and pressure gage (13) through hole in cabinet (11). Install starwasher (18) and nut (17).

(3) Hold terminal bolt (12) and install elbow (16).

(4) Connect tubing (14) to elbow (16) and tighten nut (15).

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

e. REMOVAL OF CHECK VALVE

WARNING

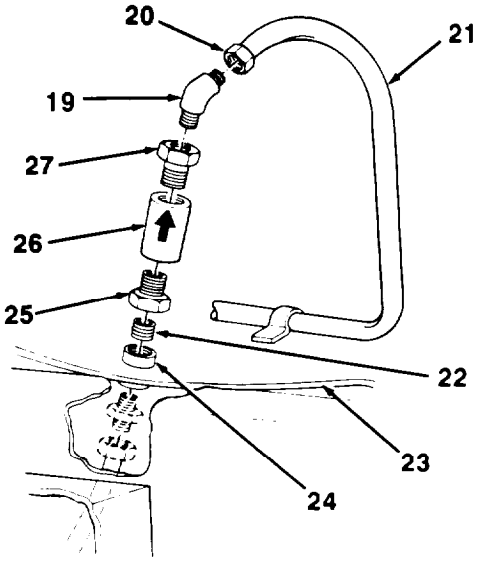
- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

(1) From inside tank, loosen nut (20) and disconnect tubing (21) from elbow (19).

(2) Hold bushing (27) and remove elbow (19).

(3) Hold bushing (25) and remove check valve (26) and bushing (27) as an assembly. Separate bushing from check valve.

(4) Remove bushing (25) and nipple (22) from coupling (24) welded to tank floor (23).



4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

f. INSTALLATION OF CHECK VALVE

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. in the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

NOTE

All male threads of elbow (19), bushings (25 and 27), and nipple (22) should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Install nipple (22) and bushing (25) to coupling (24) welded to tank floor (23).

CAUTION

Ensure that check valve (26) is installed in proper direction. An improperly installed check valve will cause malfunction of precheck system.

(2) Install bushing (27) to check valve (26). Install bushing and check valve as an assembly to bushing (25). Ensure that check valve is installed with arrow pointing to inside of tank.

(3) Hold bushing (27) and install elbow (19).

(4) Connect tubing (21) to elbow (19) and tighten nut (20).

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

g. REMOVAL OF PRECHECK TUBING

CAUTION

Use caution when releasing tubing from under clips (5). Tubing should be lifted gently and only enough to release tubing. improper handling of clips will cause them to break.

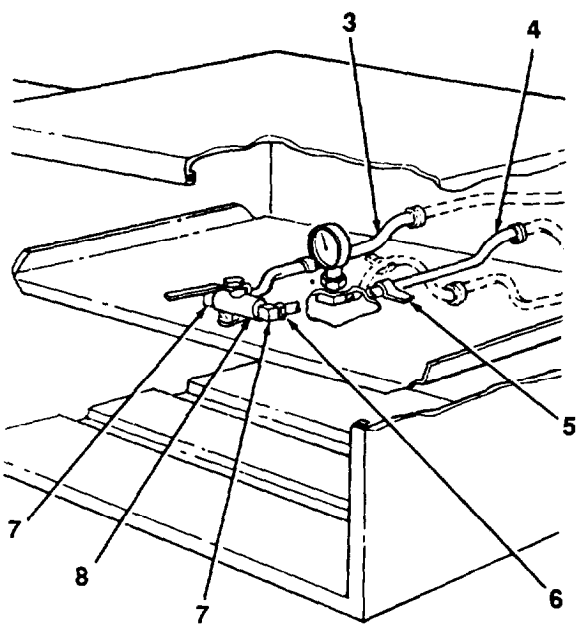
NOTE

- **A suitable drain pan should be used to catch any draining fuel as tubing lengths are disconnected. Dispose of any drained fuel in accordance with local policy. Ensure that any spilled fuel is wiped up.**
- **To remove tubing (3), perform steps 1 through 8.**
- **To remove tubing (4), perform steps 9 through 16.**
- **To remove tubing (14), perform steps 17 through 24.**
- **To remove tubing (21), perform steps 25 through 27.**

(1) Loosen nut (29) and disconnect tubing (3) from straight adapter (28).

(2) Inside cabinet (11), loosen nut (6) and disconnect tubing (3) from elbow (7).

(3) Release tubing (3) from under clip (5) on top of shelf inside cabinet (11).



NOTE

if tubing (3) is not damaged, it may be reused if there is sufficient length after cut is made.

(4) Cut tubing (3) as close to end inside cabinet (1 1) as possible.

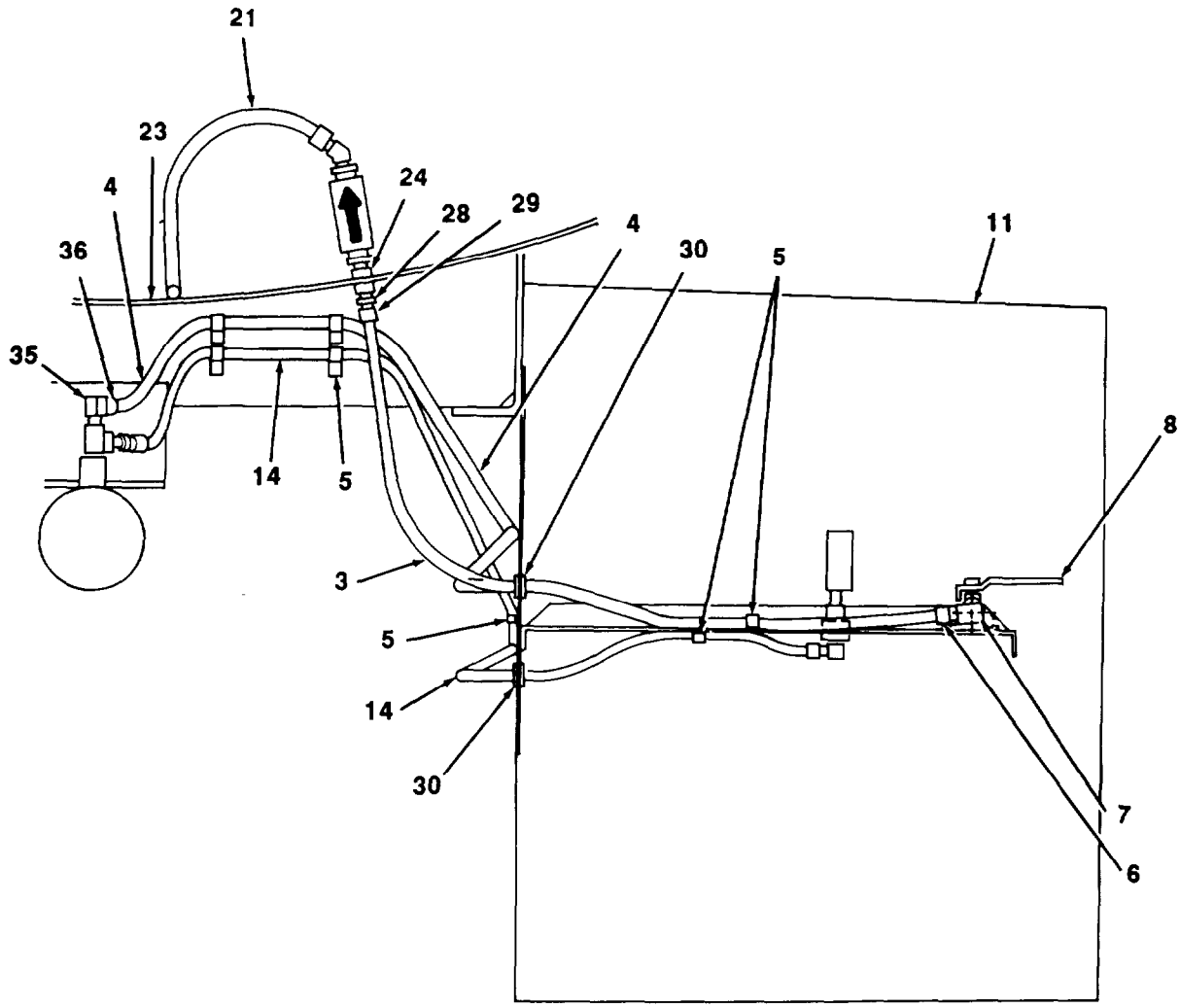
(5) Pull tubing (3) out through hole in back of cabinet (11).

(6) Remove precheck valve (8) from mounting to shelf inside cabinet (11) (see subparagraph a). Remove elbow (7) from precheck valve. Discard elbow.

(7) If tubing (3) is being replaced, remove straight adapter (28) from coupling (24) at tank floor (23).

(8) Inspect grommet (30) at back wall of cabinet (11). If damaged, remove and discard.

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).



(9) Loosen nut (36) and disconnect tubing (4) from elbow (35).

(10) Inside cabinet (11), loosen nut (6) and disconnect tubing (4) from elbow (7).

(11) Release tubing (4) from under all clips (5).

NOTE

If tubing (4) is not damaged, it may be reused if there is sufficient length after cut is made.

(12) Cut tubing (4) as close to end inside cabinet (11) as possible.

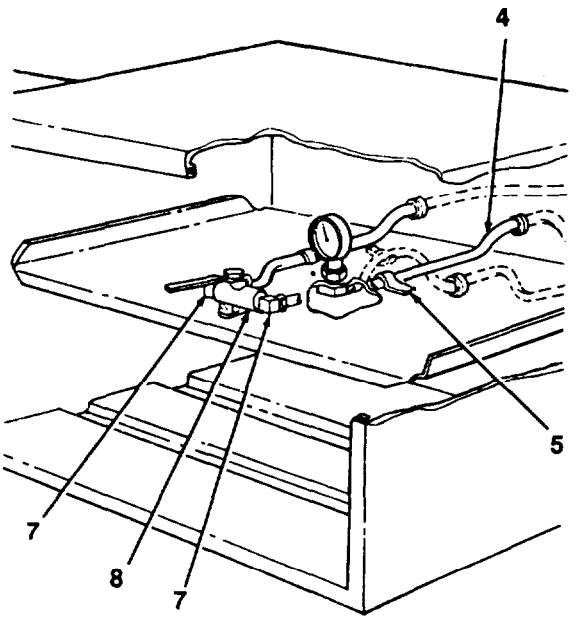
(13) Pull tubing (4) out through hole in back of cabinet (11).

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

(14) Remove precheck valve (8) from mounting to shelf inside cabinet (11) (see subparagraph a). Remove elbow (7) from precheck valve. Discard elbow.

(15) If tubing (4) is being replaced, remove elbow (35) from elbow (34) at piping assembly (33).

(16) Inspect grommet (30) at back wall of cabinet (11). If damaged, remove and discard.



(17) Loosen nut (31) and disconnect tubing (14) from straight adapter (32).

(18) Inside cabinet (11). loosen nut (15) and disconnect tubing (14) from elbow (16).

(19) Release tubing (14) from under all clips (5).

NOTE

If tubing (14) is not damaged, it may be reused if there is sufficient length after cut is made.

(20) Cut tubing (14) as close to end inside cabinet (11) as possible.

(21) Pull tubing (14) out through hole in back of cabinet (11).

(22) Remove elbow (16) from terminal bolt (12). Discard elbow.

(23) If tubing (14) is being replaced, remove straight adapter (32) from elbow (34).

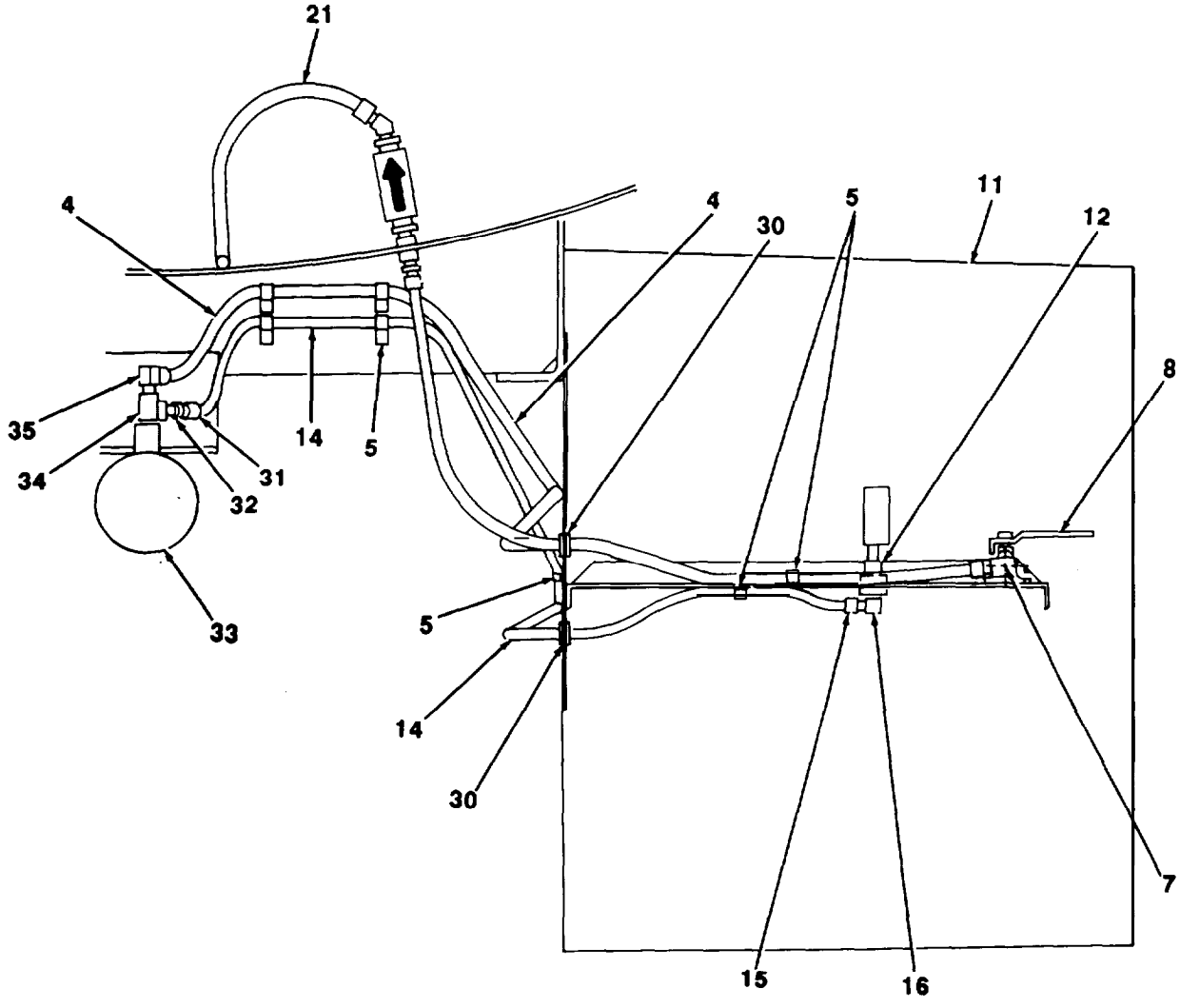
(24) Inspect grommet (30) at back wall of cabinet (11). If damaged, remove and discard.

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

(25) From inside tank, disconnect tubing (21) from jet level sensor (see paragraph 4-70).



4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

(26) Loosen nut (20) and disconnect tubing (21) from elbow (19).

(27) Release tubing (21) from under all clips (5) inside tank and remove.

h. INSTALLATION OF PRECHECK TUBING

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

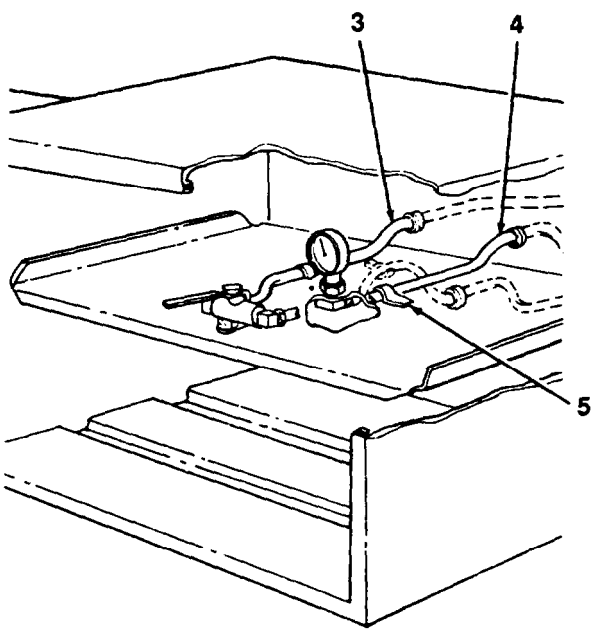
CAUTION

Use caution when securing tubing under clips (5). Improper handling of clips will cause them to break.

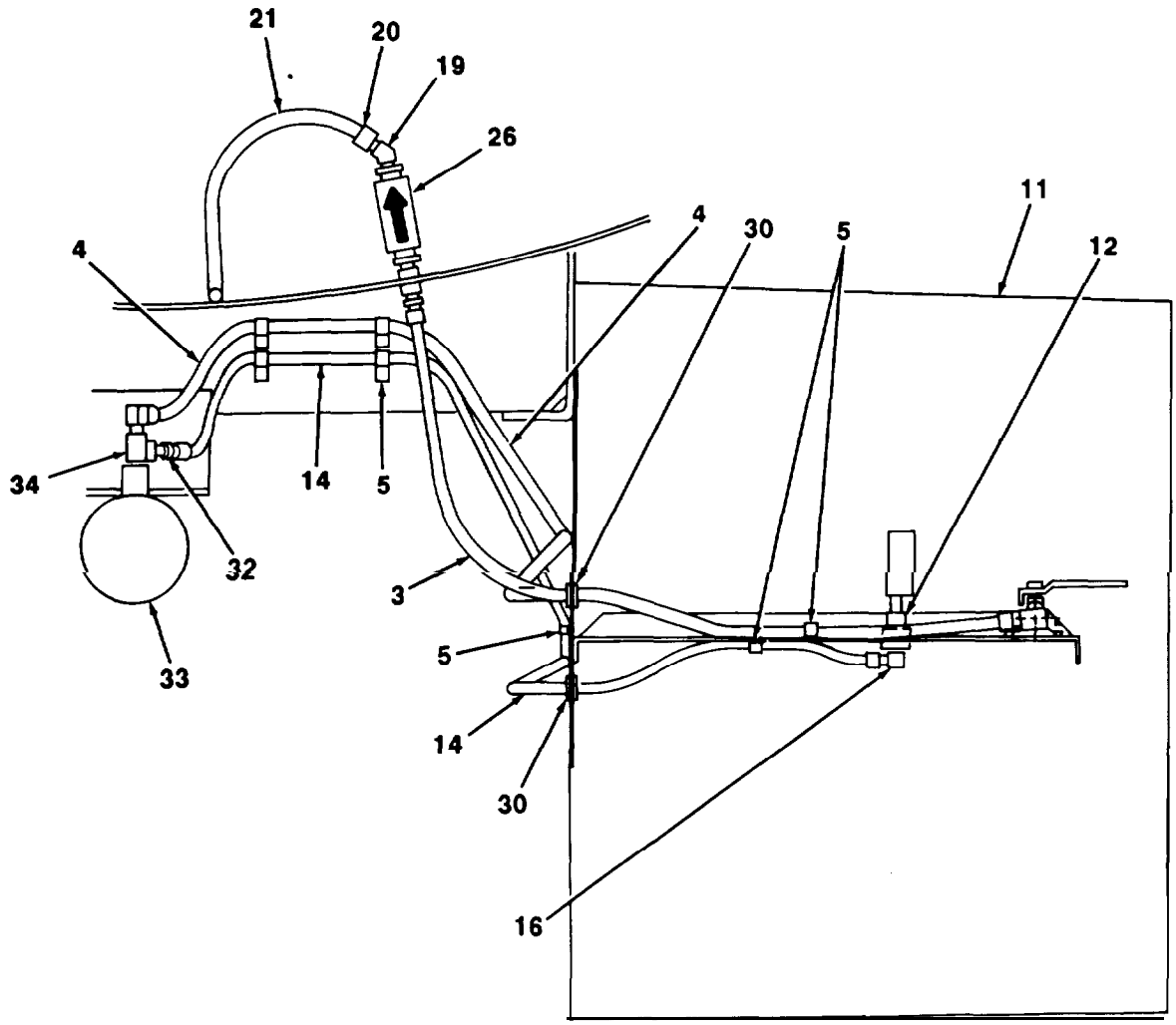
NOTE

- **All male threads of all fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.**
- **For information on manufacturing tubing lengths, refer to Appendix G.**
- **To install tubing (21), perform steps 1 through 3.**
- **To install tubing (14), perform steps 4 through 9.**
- **To install tubing (4), perform steps 10 through 15.**
- **To install tubing (3), perform steps 18 through 21.**

(1) Position tubing (21) inside tank between jet level sensor and check valve (26). Allow slack in tubing at each end. Secure tubing with clips (5). Use **a** soft-faced hammer to gently tap clips back into position.



4-72. PRECHECK SYSTEM MAINTENANCE (Con't).



(2) Connect tubing (21) to elbow (19) and tighten nut (20).

(3) Connect tubing (21) to jet level sensor (see paragraph 4-70).

(4) If removed, install new grommet (30) to hole in back wall of cabinet (11).

(5) If removed, install straight adapter (32) to elbow (34) at piping assembly (33).

(6) Install new elbow (16) to terminal bolt (12).

(7) Apply grease to grommet (30). Push tubing (14) through grommet into cabinet (11). Allow slack in tubing at each end. Secure tubing with clips (5). Use a soft-faced hammer to gently tap clips back into position.

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).

(8) Connect tubing (14) to straight adapter (32) and tighten nut (31).

(9) Connect tubing (14) to elbow (16) and tighten nut (15).

(10) If removed, install new grommet (30) to hole in back wall of cabinet (11).

(11) If removed, install elbow (35) to elbow (34) at piping assembly (33).

(12) Install new elbow (7) to precheck valve (8). Install precheck valve to shelf inside cabinet (11) (see subparagraph b).

(13) Apply grease to grommet (30). Push tubing (4) through grommet into cabinet (11). Allow slack at each end of tubing. Secure tubing with clips (5). Use a soft-faced hammer to gently tap clips back into position.

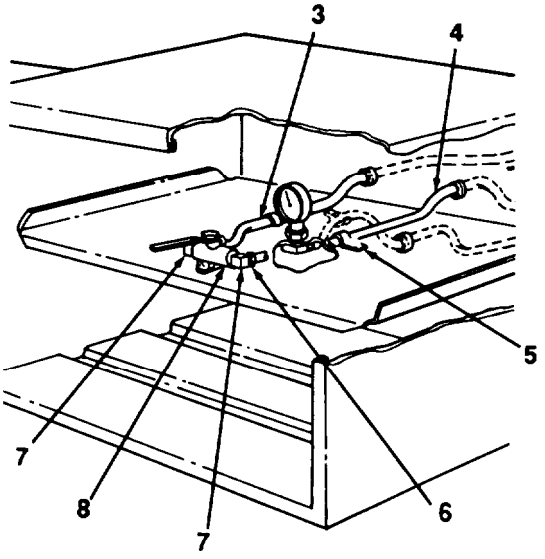
(14) Connect tubing (4) to elbow (7) and tighten nut (6).

(15) Connect tubing (4) to elbow (35) and tighten nut (36).

(16) If removed, install new grommet (30) to hole in back wall of cabinet (11).

(17) If removed, install straight adapter (28) to coupling (24).

(18) Install new elbow (7) to precheck valve (8). Install precheck valve to shelf inside cabinet (11) (see subparagraph b).

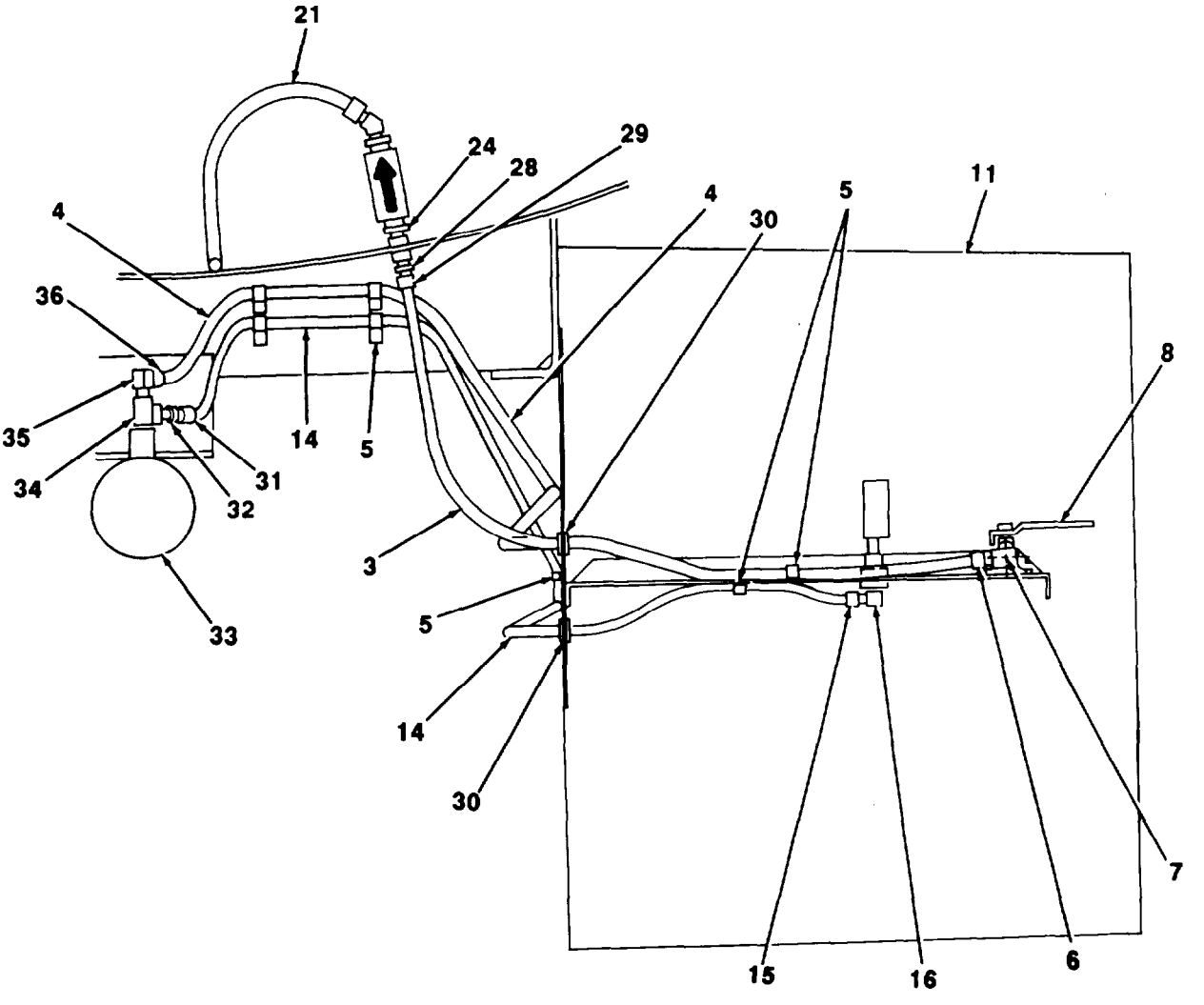


(19) Apply grease to grommet (30). Push tubing (3) through grommet into cabinet (11). Allow slack at each end of tubing. Secure tubing with clip (5). Use a soft-faced hammer to gently tap clip back into position.

(20) Connect tubing (3) to elbow (7) and tighten nut (6).

(21) Connect tubing (3) to straight adapter (28) and tighten nut (29).

4-72. PRECHECK SYSTEM MAINTENANCE (Con't).



4-73. GAGE MARKER DISK AND GROUND WIRE REPLACEMENT.

THIS TASK COVERS

a. Removal of Ground Wire
b. Installation of Ground Wire
c. Removal of Gage Marker Disk
d. Installation of Gage Marker Disk

INITIAL SETUP

Equipment Conditions:

Ref CONDITIONS
4-68 Tank purged.

Tools:

- Tool kit, general mechanic's
- Wire cutter

Personnel Required: Two

General Safety Instructions:

- When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed.
- NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations.

a. REMOVAL OF GROUND WIRE

NOTE

Ground wire (2) may be frayed at end. This is normal.

Cut ground wire (2) from gage marker rod (1) and remove.

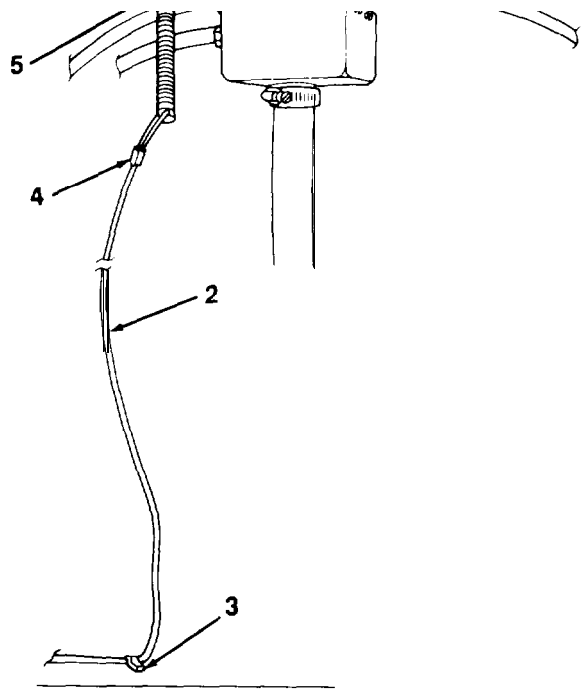
b. INSTALLATION OF GROUND WIRE

(1) Install ground wire (2) through hole in gage marker rod (1) and install one sleeve (4). Use vise grips to crimp sleeve.

NOTE

Ground wire (2) is not attached to tank floor: ground wire only rests on tank floor.

(2) Install sleeve (3) approximately 6 in. (15.24 cm) from other end of ground wire (2). Use vise grips to crimp sleeve.



4-73. GAGE MARKER DISK AND GROUND WIRE REPLACEMENT (Con't).

c. REMOVAL OF GAGE MARKER DISK

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside e tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

Remove jam nut (5) and disk (6) from gage marker rod (1).

d. INSTALLATION OF GAGE MARKER DISK

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done, and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. In the event a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

NOTE

To ensure proper calibration, disk (6) must be installed according to specifications given.

Install disk (6) and jam nut (5) on gage marker rod (1). Adjust jam nut so that bottom edge of disk is 54.75 in. (139.1 cm) above tank floor.

Section XIV. LINES, FITTINGS, AND VALVES MAINTENANCE

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4-75	Emergency Valve Remote Trip-Release Replacement	4-244
4-76	Emergency Valve and Vapor Vent Cables and Tubing Maintenance	4-246
4-77	Vent Cap Assembly Replacement	4-252
4-78	Vapor Collection System Maintenance	4-254
4-79	Sump Drain Replacement	4-257
4-80	Piping Assembly, Front Port, and Rear Inlet Maintenance	4-260
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4-84	Winterization of Bottom Loading System	4-281

4-74. EMERGENCY VALVE OPERATOR MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Installation
c. Adjustment of Cables

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
_ _	Tank empty.

Materials/Parts:

- Four locknuts
- Grease (Item 12, Appendix E)

Tools:

- Tool kit, general mechanic's

a. REMOVAL

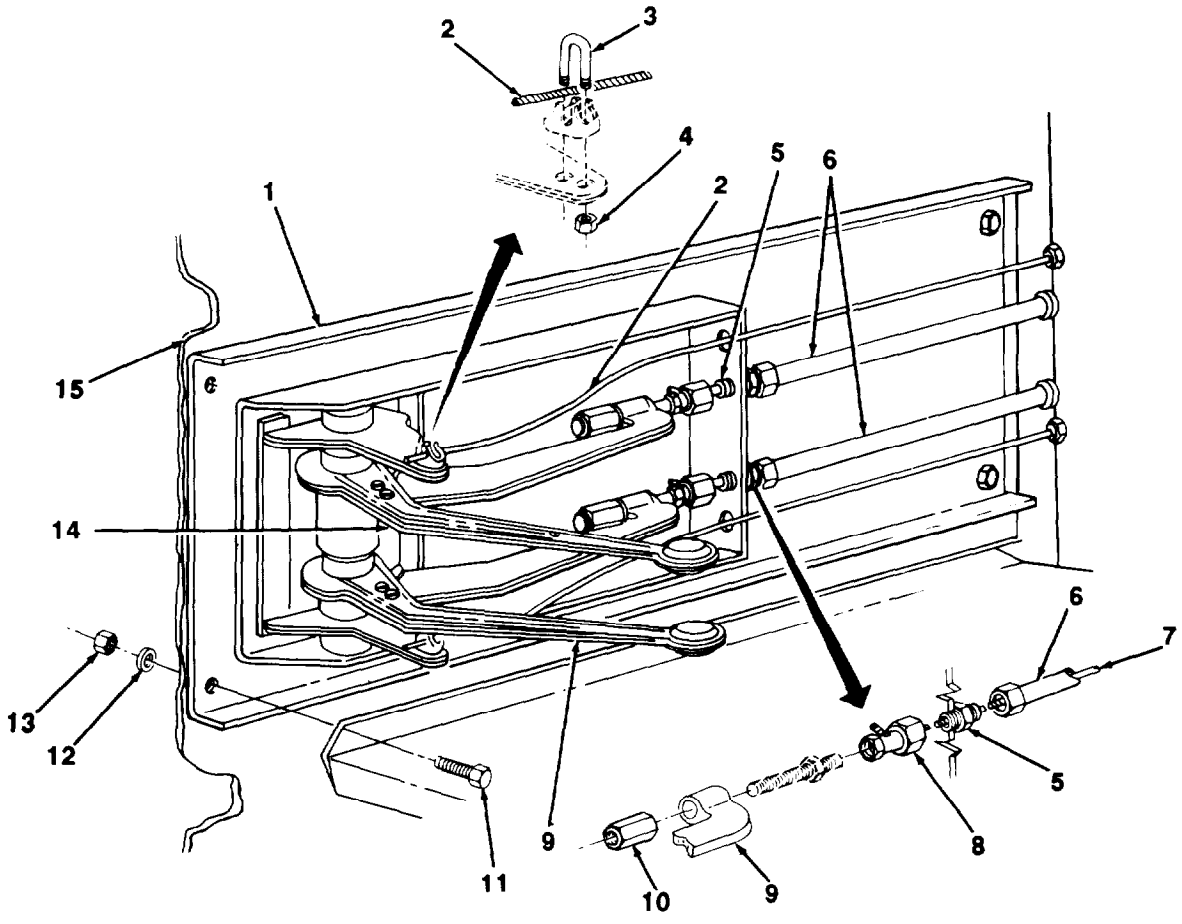
(1) Remove two nuts (4), loosen U-bolt (3), and disconnect cable (2) from emergency valve control lever (14). Remove two nuts, loosen U-bolt, and disconnect cable from vapor vent control lever (9).

CAUTION

DO NOT hold large fusible nuts (10) when loosening two nuts (8). Fusible nuts will strip if held.

(2) Loosen two nuts (8) and disconnect two cables (7) from emergency valve control lever (14) and vapor vent control lever (9).

4-74. EMERGENCY VALVE OPERATOR MAINTENANCE (Con't).



(3) Loosen nuts on two straight adapters (5).

(4) Remove four locknuts (13), washers (12), and screws (11). Remove emergency valve operator (1) from cabinet (15). Discard locknuts.

(5) Remove straight adapters (5) from emergency valve operator (1).

b. INSTALLATION

(1) Install two straight adapters (5) to emergency valve operator (1). Position emergency valve operator inside cabinet (15) and thread two cables (7) through straight adapters.

(2) Install emergency valve operator (1) to cabinet (15) with four screws (11), washers (12), and new locknuts (13).

(3) Connect tubing (6) to each straight adapter (5) and tighten nuts.

4-74. EMERGENCY VALVE OPERATOR MAINTENANCE (Con?).

CAUTION

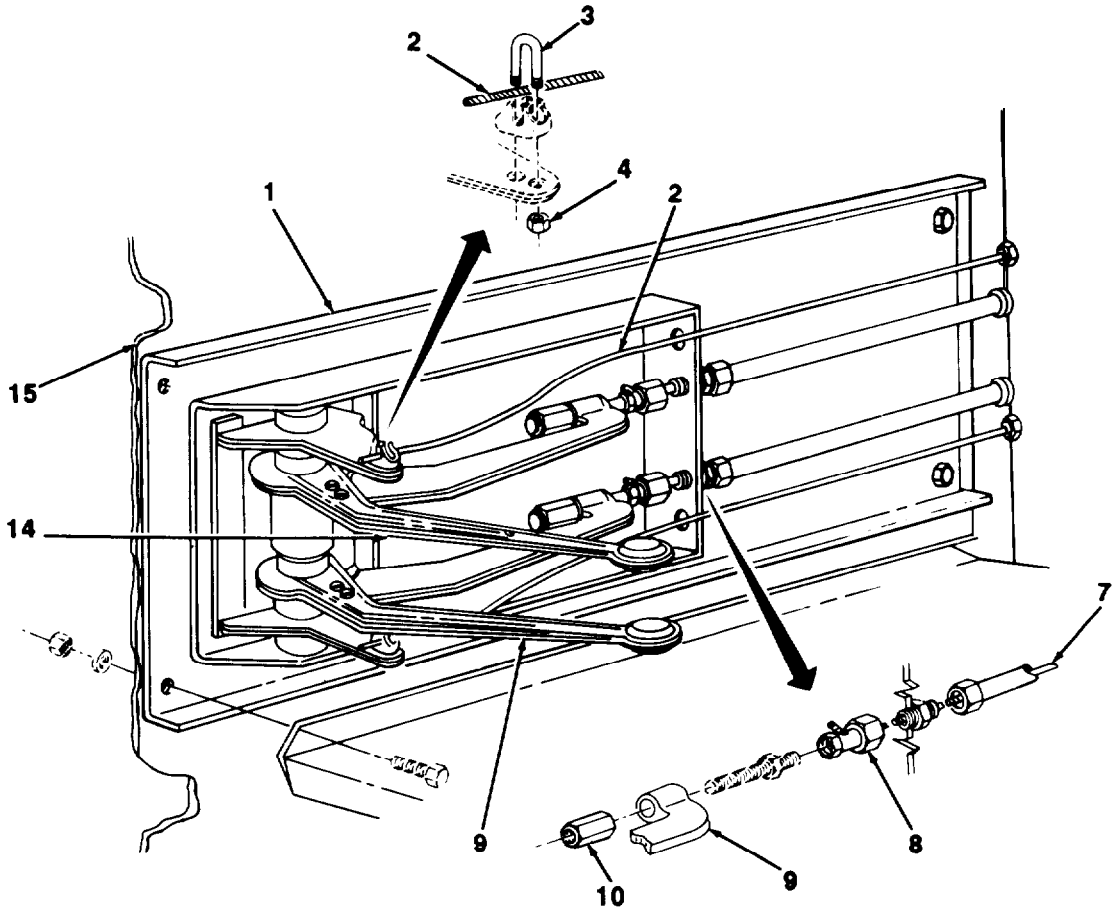
DO NOT hold large fusible nuts (10) when tightening nuts (8). Fusible nuts will strip if held.

(4) Connect two cables (7) to emergency valve control lever (14) and vapor vent control lever (9). Tighten two nuts (8).

(5) Connect bottom cable (2) to vapor vent control lever (9). Install two nuts (4).

(6) Connect top cable (2) to emergency valve control lever (14). Install two nuts (4).

(7) Check operation of emergency valve operator (1). Adjust cable lengths, as required (see ADJUSTMENT OF CABLES, subparagraph c).



4-74. EMERGENCY VALVE OPERATOR MAINTENANCE (Con?).

c. ADJUSTMENT OF CABLES

NOTE

- **Adjustment in cable lengths may be made at emergency valve operator (1) or at other end of cable (emergency valve, vapor vent, or emergency valve remote trip-release).**
- **If adjusting emergency valve remote trip-release cables (2), perform steps 4 and 5.**

(1) At cabinet (15), push emergency valve control lever (14) and vapor vent control lever (9) to close.

(2) Pull on each control lever (9 and 14) in turn. There should be ½ -1 in. (1.3-2.5 cm) of free travel before cables (7) tighten.

(3) If too much free travel is noted, loosen nut (8) and shorten cable (7). If not enough free travel is noted, lengthen cable.

(4) Pull emergency valve control lever (14) and vapor vent control lever (9) to open.

(5) Loosen four nuts (4) at U-bolts (3). Pull on cables (2) and take up all slack. Tighten nuts.

(6) Lubricate cables (2 and 7) at grease fittings, as required (see Chapter 3, Section I).

4-75. EMERGENCY VALVE REMOTE TRIP-RELEASE REPLACEMENT.

THIS TASK COVERS

a. Removal **b. Installation**

INITIAL SETUP

Materials/Parts:
- Two locknuts

Tools:
- Tool kit, general mechanic's

Personnel Required: Two

a. REMOVAL

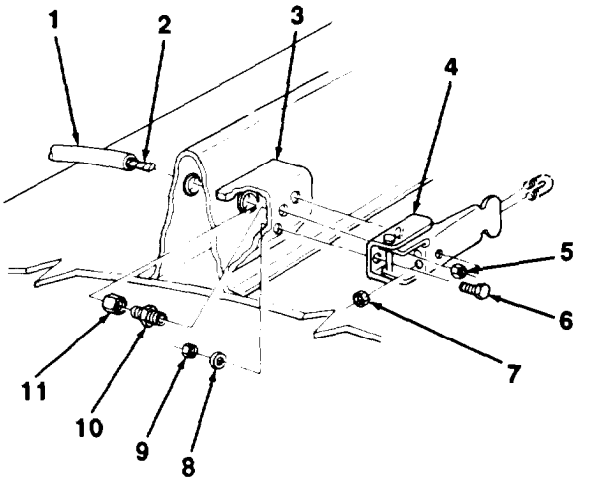
NOTE

- **Removal of remote trip-release (4) on top, curbside of semitrailer is shown. Remote trip-release at front, roadside is removed the same.**
- **If disconnecting cable (2) and tubing (1), perform step 1.**

(1) Loosen two nuts (7). Remove nut (11) from straight adapter (10).

(2) Remove two locknuts (9) and washers (8). Remove remote trip-release (4) from mounting bracket (3). Discard locknuts.

(3) Remove two screws (6) from remote trip-release (4).



NOTE

If remote trip-release (4) has never been serviced, nut (5) is tack welded to remote trip-release and cannot be removed.

(4) Remove nut (5) and straight adapter (10) from remote trip-release (4) and set aside.

4-75. EMERGENCY VALVE REMOTE TRIP-RELEASE REPLACEMENT (Con?).

b. INSTALLATION

NOTE

If connecting cable (2) and tubing (1), perform steps 4 and 6.

(1) Install straight adapter (10) to remote trip-release (4) with nut (5).

(2) Install two screws (6) to remote trip-release (4).

(3) Position remote trip-release (4) at mounting bracket (3) with cable (2) threaded through hole in straight adapter (10) and U-bolt in remote trip-release.

(4) Install nut (11) to straight adapter (10).

(5) Install two washers (8) and new locknuts (9).

(6) Take up slack in cable (2) and tighten two nuts (7).

(7) Pull emergency valve control lever in cabinet to open (see paragraph 2-2), Pull on handle of remote trip-release (4) and check that control lever in cabinet closes. If control lever in cabinet does not close, adjust length of cable (2) as required (see paragraph 4-74).

4-76. EMERGENCY VALVE AND VAPOR VENT CABLES AND TUBING MAINTENANCE.

THIS TASK COVERS

a. General
b. Removal of Cable and Tubing
c. Installation of Cable and Tubing
d. Disconnection of Cable and Tubing at Emergency Valve
e. Connection of Cable and Tubing at Emergency Valve
f. Disconnection of Cable and Tubing at Vapor Vent
g. Connection of Cable and Tubing at Vapor Vent

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
- -	Tank empty.

Tools:

- Tool kit, general mechanic's
- Tubing bender
- Tubing cutter

Materials/Parts:

- Grease (Item 12, Appendix E)
- Grease (Item 13, Appendix E)

Personnel Required: Two

a. GENERAL

(1) There are four cables installed on semitrailer that function to operate emergency valve and vapor vent. Each cable is a one-piece structure which cannot be spliced.

(2) Each cable is enclosed in tubing which is pieced. There are two sections of tubing per cable length, joined together by a grease fitting.

(3) The supporting hardware is the same along each cable and tubing assembly. Only the numbers vary.

(4) It is important that grommets be used where called for. This will help prevent damage to tubing.

b. REMOVAL OF CABLE AND TUBING

NOTE

- **This procedure describes removal of an entire cable (11) and tubing (5) assembly.**
- **To disconnect cable (11) and tubing (5) at emergency valve (6), refer to subparagraph d.**
- **To disconnect cable** (11) **and tubing (5) at vapor vent (3), refer to subparagraph f.**
- **To disconnect cable (11) and tubing (5) at cabinet (7), refer to paragraph 4-74.**
- **To disconnect cable (11) and tubing (5) at remote trip-release (1), refer to paragraph 4-75.**

(1) Disconnect cable (11) and tubing (5) at each end.

4-76. EMERGENCY VALVE AND VAPOR VENT CABLES AND TUBING MAINTENANCE (Con't).

NOTE

If replacing only one length of tubing (5), cable (11) should be pulled out only just past grease fitting (4).

(2) From one end, pull cable (11) all the way out.

(3) Cut tubing (5) at several locations along its length. Loosen nuts at grease fitting (4).

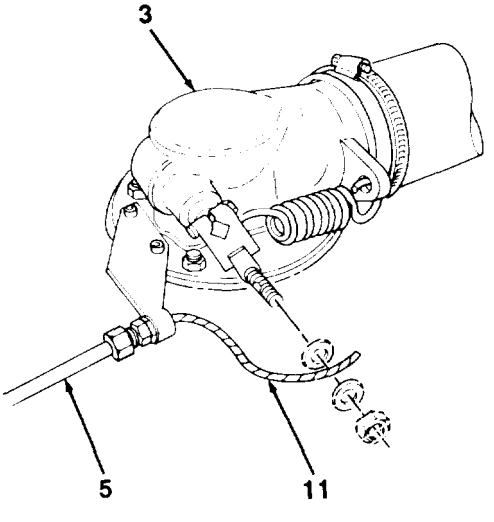
CAUTION

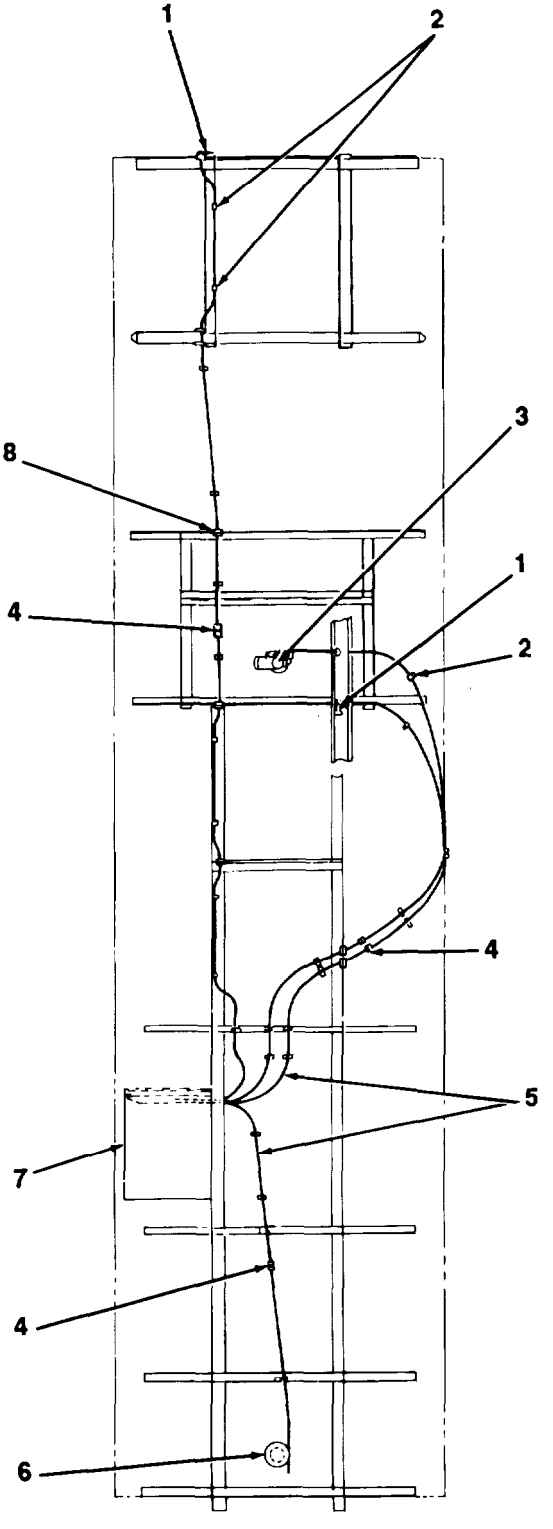
Use caution when releasing tubing (5) from under clips (2). Clips should be lifted gently and only enough to release tubing. Failure to follow this caution will cause clips to break off.

(4) Lift clips (2) and remove all lengths of tubing (5). Remove straight adapters at ends, as required. Remove grease fitting (4).

(5) Inspect all grommets (8). Replace any damaged grommet.

(6) Inspect grease fitting (4) and cable (11). Replace if damaged.





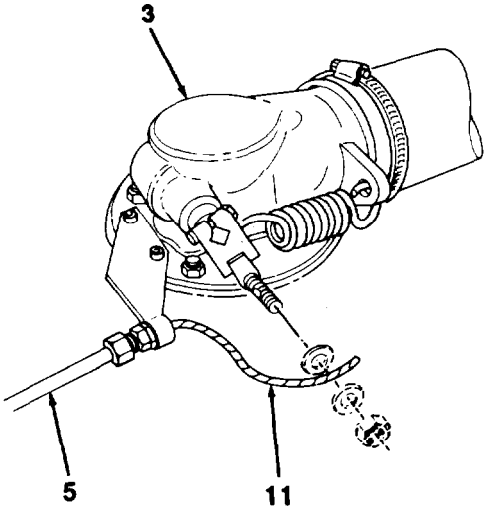
4-76. EMERGENCY VALVE AND VAPOR VENT CABLES AND TUBING MAINTENANCE (Con't).

c. INSTALLATION OF CABLE AND TUBING

NOTE

- **This procedure describes installation of an entire cable (11) and tubing (5) assembly.**
- **To connect cable (11) and tubing (5) at emergency valve (6), refer to subparagraph e.**
- **To connect cable (11) and tubing (5) at vapor vent (3), refer to subparagraph g.**
- **To connect cable (11) and tubing (5) at cabinet (7), refer to paragraph 4-74.**
- **To connect cable (11) and tubing (5) at remote trip-release (1), refer to paragraph 4-75.**

(1) Working from cabinet (7) end, bend new length of tubing (5), using old tubing as a guide. To ensure smooth operation of cable (11) inside tubing, do not kink or deform any bends.



(2) Apply grease to all grommets (8) to allow for easier installation of tubing (5).

CAUTION

- **Use caution when securing tubing (5) under clips (2). Improper handling of clips will cause them to break.**
- **If two or more consecutive clips (2) are missing or damaged, tubing (5) will not be adequately supported.**

(3) Install new length of tubing (5) through grommets (8) and secure under clips (2) by tapping gently on clips with a soft-faced hammer. If two or more consecutive clips are missing or damaged, notify direct support maintenance.

(4) Connect tubing (5) at cabinet (7) end.

4-76. EMERGENCY VALVE AND VAPOR VENT CABLES AND TUBING MAINTENANCE (Con't).

CAUTION

- **Use caution when securing tubing (5) under clips (2). Improper handling of clips will cause them to break.**
- **If two or more consecutive clips (2) are missing or damaged, tubing (5) will not be adequately supported.**

(5) Bend other length of tubing (5) as required. Install through grommets (8) and secure under clips (2) in same manner as tubing at cabinet (7) end. If two or more consecutive clips are missing or damaged, notify direct support maintenance.

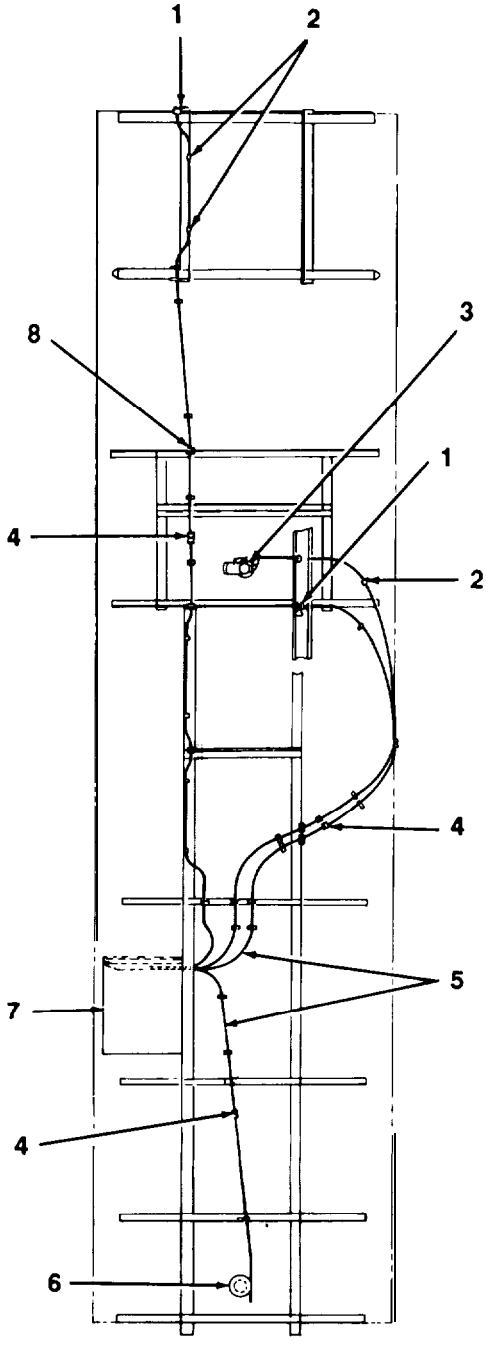
(6) Connect tubing (5) at emergency valve (6), vapor vent (3), or remote trip-release (1) end.

(7) Cut tubing (5), as required, at point of installation of grease fitting (4).

(8) Connect tubing (5) lengths with grease fitting (4) and tighten two grease fitting nuts.

(9) Install cable (11) through tubing (5). Connect cable at each end.

(10) Adjust length of cable (11) (see paragraph 4-74).



4-76. EMERGENCY VALVE AND VAPOR VENT CABLES AND TUBING MAINTENANCE (Con't).

d. DISCONNECTION OF CABLE AND TUBING AT EMERGENCY VALVE

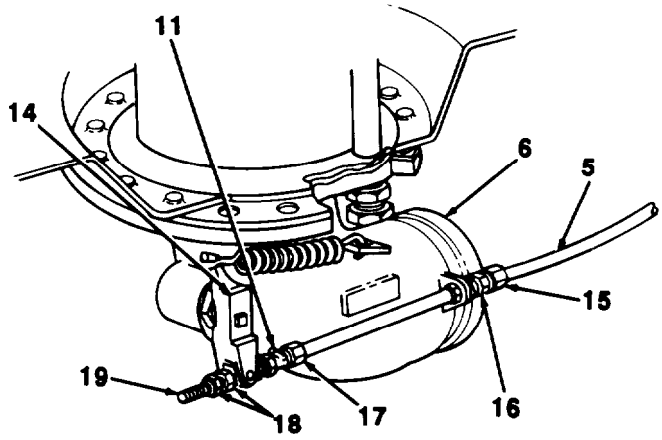
(1) Loosen nut (17) and disconnect cable (11) from adjusting bolt (19).

(2) From inside cabinet (7), pull cable (11) away from emergency valve (6) by manually pulling on cable that is second cable down, attached to emergency valve control lever (top lever). Loosen nut (15) and disconnect tubing (5) from straight adapter (16).

(3) Remove nut (15) from straight adapter (16). Remove straight adapter from emergency valve (6).

(4) Pull tubing (5) and cable (11) from emergency valve (6).

(5) If damaged, remove two nuts (18) and adjusting bolt (19) from lever (14).



e. CONNECTION OF CABLE AND TUBING AT EMERGENCY VALVE

(1) If removed, install adjusting bolt (19) to lever (14) and install two nuts (18).

(2) Install straight adapter (16) to emergency valve (6). From inside cabinet (7)) pull cable (11) away from straight adapter by manually pulling on cable that is second cable down, attached to emergency valve control lever (top lever).

(3) Connect tubing (5) to straight adapter (16) and tighten nut (15).

(4) From inside cabinet (7), push cable (11) through tubing (5). Connect cable to adjusting bolt (19) and tighten nut (17).

NOTE

Cable (11) length may be adjusted at both ends.

(5) Pull on emergency valve control lever in cabinet (7) and check operation of cable (11). To adjust length of cable at emergency valve (6), turn two nuts (18) at adjusting bolt (19). To adjust length of cable at cabinet, refer to paragraph 4-74.

(6) Lubricate cable (11) at grease fitting (4), as required (see Chapter 3, Section I).

4-76. EMERGENCY VALVE AND VAPOR VENT CABLES AND TUBING MAINTENANCE (Con't).

f. DISCONNECTION OF CABLE AND TUBING AT VAPOR VENT

Loosen nuts (10 and 13).

g. CONNECTION OF CABLE AND TUBING AT VAPOR VENT

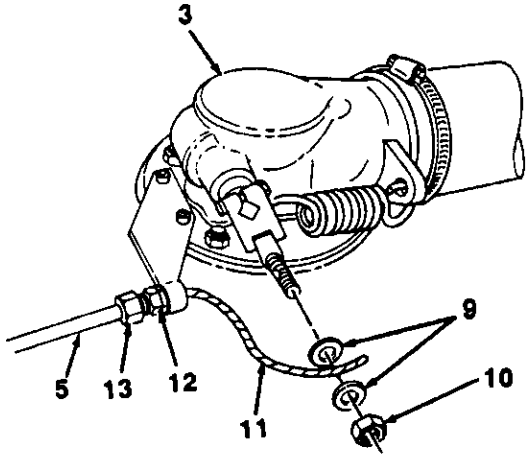
(1) Connect tubing (5) at straight adapter (12) and tighten nut (13).

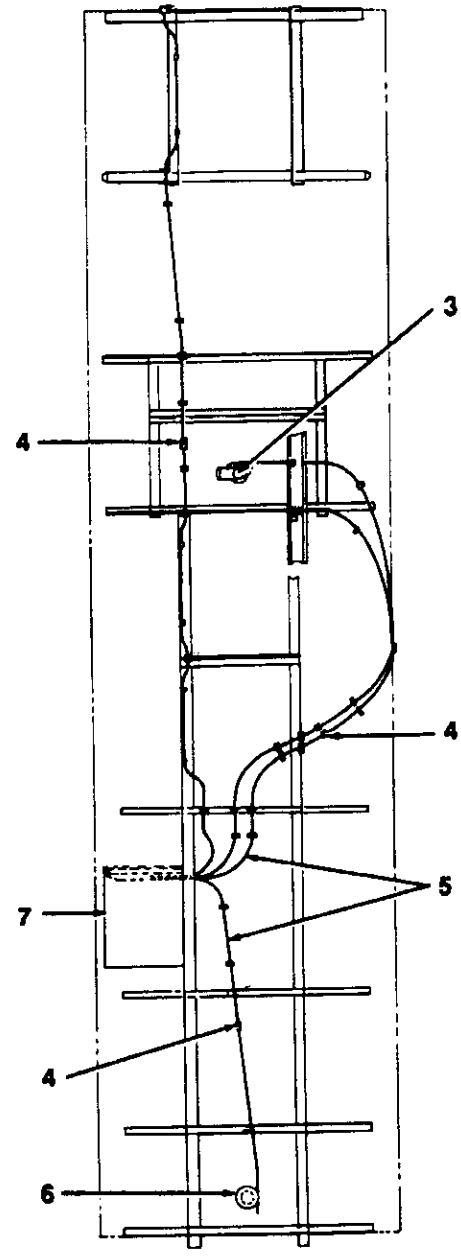
NOTE

Ensure that cable (11) passes between washers (9).

(2) Connect cable (11) to vapor vent (3) and tighten nut (10).

(3) Adjust length of cable (11), as required (see paragraph 4-74).





4-77. VENT CAP ASSEMBLY REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.

Tools:

- Tool kit, general mechanic's
- Pipe wrench

Materials/Parts:

- One gasket
- Two S-hooks
- Antiseize tape (Item 22, Appendix E)

General Safety Instructions:

- Use extreme caution when working or walking on top of trailer.

a. REMOVAL

WARNING

Use extreme caution when walking or working on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.

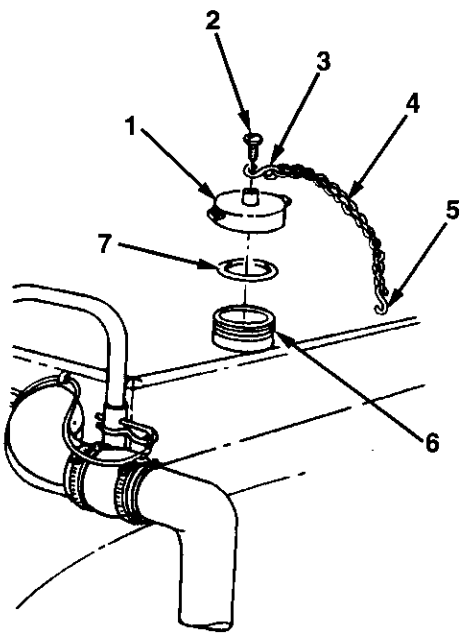
(1) Open manhole fill cover, if closed, and allow tank pressure to vent (see paragraph 2-16).

(2) Remove screw (2) and S-hook (3), with attached chain, from vent cap (1).

(3) Remove two S-hooks (3 and 5) from chain (4). Discard S-hooks.

(4) Remove vent cap (1) from pipe nipple (6).

(5) Remove and discard gasket (7).



4-77. VENT CAP ASSEMBLY REPLACEMENT (Con't).

b. INSTALLATION

WARNING

Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.

(1) Apply antiseize tape to threads of pipe nipple (6).

(2) Install new gasket (7) inside vent cap (1).

CAUTION

DO NOT overtighten vent cap (1) or damage to gasket (7) will result.

(3) Install vent cap (1) finger-tight. Then tighten vent cap (1) an additional 1/4 to 1/2 turn until gasket (7) is firmly and evenly compressed.

(4) Attach two new S-hooks (3 and 5) to chain (4).

(5) Attach S-hook (3), with attached chain (4), to vent cap (1) with screw (2).

(6) Close manhole fill cover (see paragraph 2-16).

4-78. VAPOR COLLECTION SYSTEM MAINTENANCE.

THIS TASK COVERS

a. Removal of Vapor Return Line and Adapter
b. Installation of Vapor Return Line and Adapter
c. Removal of Vapor Vent Hose
d. Installation of Vapor Vent Hose

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.

Tools:

- Tool kit, general mechanic's
- Pipe wrench
- Wire cutter

Materials/Parts:

- One gasket
- Four lockwashers

Personnel Required: Two

General Safety Instructions:

- Use extreme caution when working or walking on top of semitrailer.

a. REMOVAL OF VAPOR RETURN LINE AND ADAPTER

(1) Remove dust cap (1) and adapter (2) from vapor return line (6). If dust cap gasket (9) is damaged, remove and discard. If dust cap is damaged, cut cable and remove dust cap from adapter.

WARNING

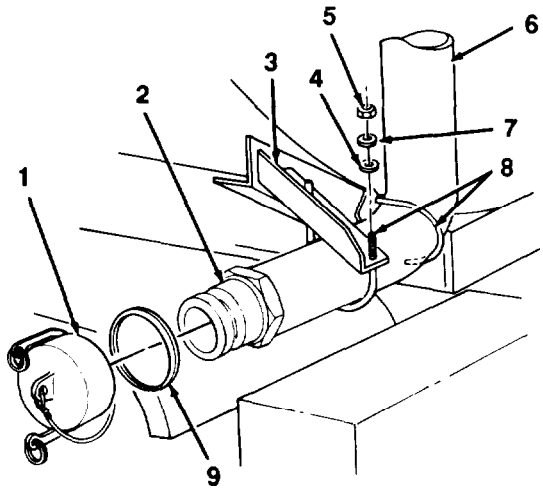
Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.

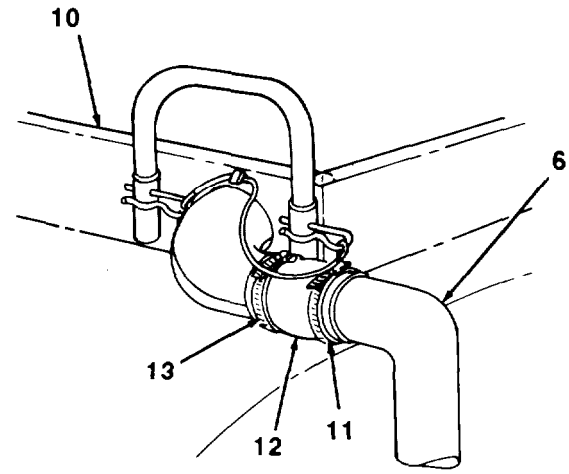
(2) Remove retaining strap (11) securing hose (12) to vapor return line (6).

(3) Remove four nuts (5), lockwashers (7), washers (4), and two U-bolts (8) from two support brackets (3). Lower vapor return line (6) to ground. Discard lockwashers.

(4) Remove retaining strap (13) and hose (12) from line at overturn rail (10).

4-78. VAPOR COLLECTION SYSTEM MAINTENANCE (Con't).





b. INSTALLATION OF VAPOR RETURN LINE AND ADAPTER

WARNING

Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.

(1) Connect hose (12) to line at overturn rail (10) with retaining strap (13).

(2) Position vapor return line (6) with end inserted into hose (12). Loosely install vapor return line to two support brackets (3) with two U-bolts (8), four washers (4), new lockwashers (7), and nuts (5).

(3) Connect vapor return line (6) to hose (12) and fully tighten retaining strap (11).

(4) Fully tighten four nuts (5) at two U-bolts (8).

(5) Install new gasket (9) to dust cap (1), if removed.

(6) Install adapter (2) and dust cap (1) to vapor return line (6).

(7) If removed, cut a length of cable and install through loops in dust cap (1) and adapter (2). Secure with two crimped sleeves.

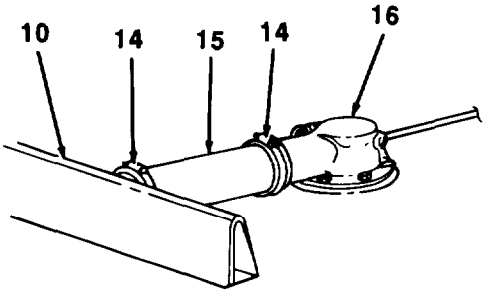
4-78. VAPOR COLLECTION SYSTEM MAINTENANCE (Con't).

c. REMOVAL OF VAPOR VENT HOSE

WARNING

Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious Injury to personnel.

Remove two clamps (14) and vapor vent hose (15) from overturn rail (10) and vapor vent (16).



d. INSTALLATION OF VAPOR VENT HOSE

WARNING

Use extreme caution when working or walking on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.

Install vapor vent hose (15) between overturn rail (10) and vapor vent (16). Tighten two clamps (14).

4-79. SUMP DRAIN REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning and Inspection
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-68 Tank purged.

Materials/Parts:

- One locknut
- Two lockwashers
- Drain pan
- Antiseize tape (Item 22, Appendix E)

Tools:

- Tool kit, general mechanic's
- Pipe wrench

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- Compressed air used to dry and clear passages must not exceed 30 psi (207 kPa).

4-79. SUMP DRAIN REPLACEMENT (Con't).

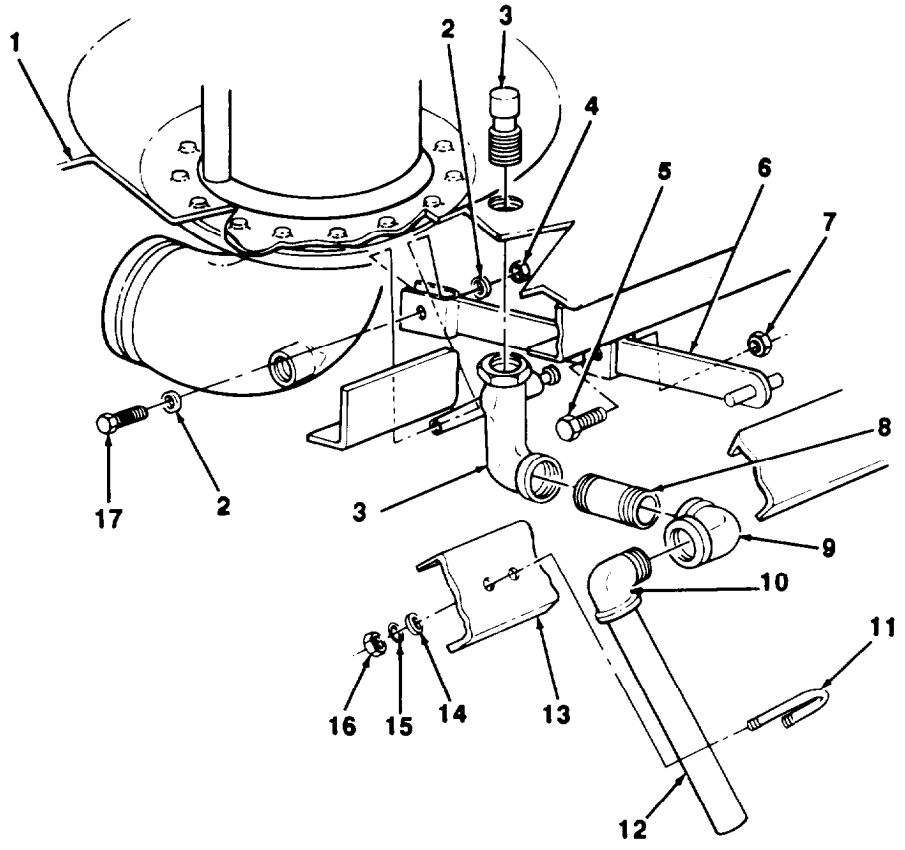
a. REMOVAL

(1) Place a drain pan under drain (12). Remove nut (7) and security bolt (5). Pull on sump drain control lever (6) and allow all fluid to drain from tank sump (1).

(2) At support bracket (13), remove two nuts (16), lockwashers (15), washers (14), and U-bolt (11). Discard lockwashers.

(3) Remove pipe (12) from elbow (10).

(4) Remove locknut (4), two washers (2), and bolt (17) and disconnect sump drain control lever (6) from sump drain valve (3). Discard locknut.



(5) Loosen sump drain valve (3) and pivot it clockwise 90 degrees.

(6) Remove pipe (8) from sump drain valve (3). Remove elbows (9 and 10) from pipe.

(7) Remove sump drain valve (3) from tank sump (1).

4-79. SUMP DRAIN REPLACEMENT (Con't).

b. CLEANING AND INSPECTION

WARNING

- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100° F-138° F (38° C-59° C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.**
- **Compressed air used to dry and clear passages must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.**

(1) Clean all removed components in dry cleaning solvent. Use compressed air to dry thoroughly and to clear all passages.

(2) Inspect all removed components for damage. Replace if damaged.

c. INSTALLATION

NOTE

Apply antiseize tape to pipe threads as components are installed.

(1) Install sump drain valve (3) to tank sump (1). Leave 90 degrees loose from final installed position.

(2) Install pipe (8) and elbows (9 and 10). Tighten sump drain valve (3) to its fully installed position.

(3) Install pipe (12) to elbow (10). Install pipe to support bracket (13) with U-bolt (11), two washers (14), new lockwashers (15), and nuts (16).

(4) Connect sump drain control lever (6) to sump drain valve (3) with bolt (17), two washers (2), and new locknut (4).

(5) Push on sump drain control lever (6) to ensure that sump drain valve (3) is closed.

(6) Install security bolt (5) and nut (7).

4-80. PIPING ASSEMBLY, FRONT PORT, AND REAR INLET MAINTENANCE.

THIS TASK COVERS

a. Removal of Front Port Components
b. Installation of Front Port Components
c. Removal of Rear Inlet Components
d. Installation of Rear Inlet Components
e. Removal of Piping Assembly
f. Installation of Piping Assembly

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-68 Tank purged.

Tools:

- Tool kit, general mechanic's
- Jackstand
- Wire cutter

Materials/Parts:

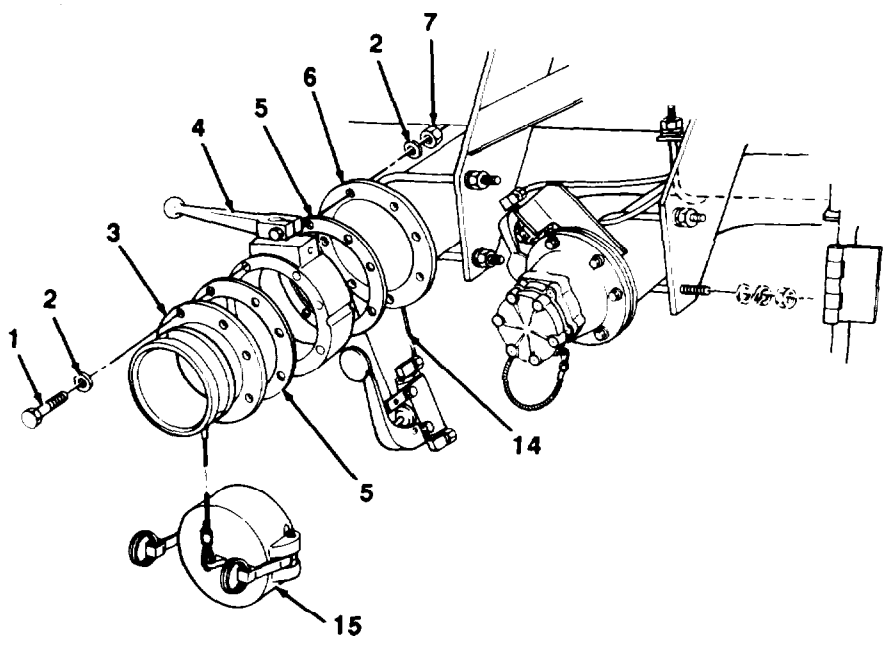
- Three gaskets
- Eight lockwashers
- Sixteen locknuts
- Grease (Item 12. Appendix E)

Personnel Required: Two

a. REMOVAL OF FRONT PORT COMPONENTS

(1) Remove dust cap (15) from adapter (3). Inspect dust cap gasket for damage. If damaged, remove and discard.

(2) If dust cap (15) is damaged, cut cable and remove dust cap.



4-80. PIPING ASSEMBLY, FRONT PORT, AND REAR INLET MAINTENANCE (Con't).

NOTE

Mark position of brake interlock angle bracket (14) to ensure installation in same position.

(3) Remove two locknuts (7), screws (1), and four washers (2) and remove brake interlock angle bracket (14) from rear of piping assembly (6) flange. Let angle bracket hang. Discard locknuts.

(4) Remove six remaining locknuts (7), screws (1), and twelve washers (2). Remove adapter (3), gate valve (4), and two gaskets (5) from piping assembly (6) flange. Discard gaskets and locknuts.

b. INSTALLATION OF FRONT PORT COMPONENTS

(1) Loosely install gate valve (4), two new gaskets (5), and adapter (3) to piping assembly flange (6) with six screws (1), twelve washers (2), and six new locknuts (7).

(2) Install brake interlock angle bracket (14), as marked, to rear of piping assembly (6) flange with two remaining screws (1), four washers (2), and two new locknuts (7). Tighten all eight locknuts in a crisscross pattern.

(3) If removed, install new gasket to dust cap (15). Install dust cap to adapter (3).

(4) If cable was removed, cut a length of cable and thread through loops in dust cap (15) and adapter (3). Secure cable with two crimped sleeves.

c. REMOVAL OF REAR INLET COMPONENTS

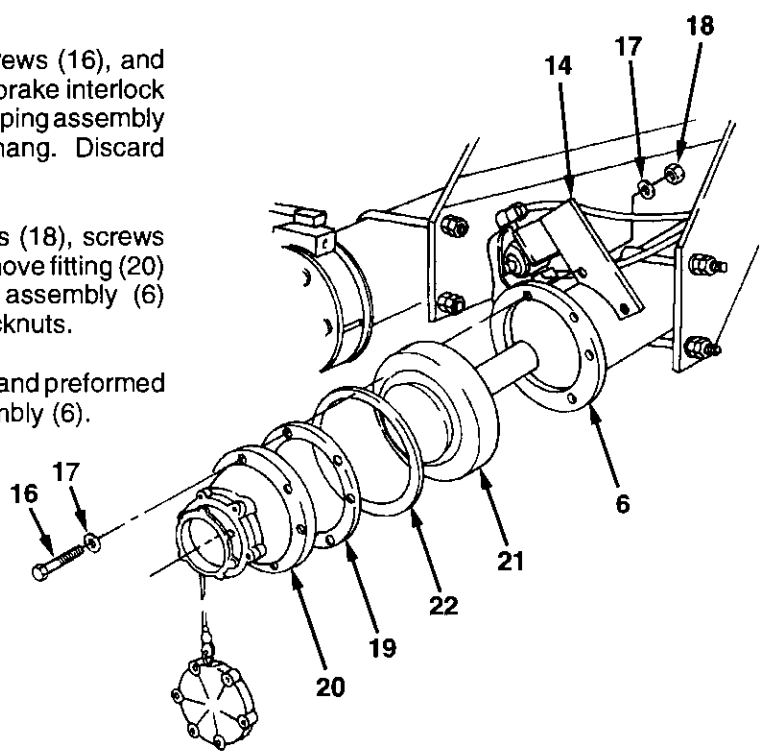
NOTE

Mark position of brake interlock angle bracket (14) to ensure installation in same position.

(1) Remove two locknuts (18), screws (16), and four washers (17) and remove brake interlock angle bracket (14) from rear of piping assembly (6) flange. Let angle bracket hang. Discard locknuts.

(2) Remove six remaining locknuts (18), screws (16), and 12 washers (17). Remove fitting (20) and gasket (19) from piping assembly (6) flange. Discard gasket and locknuts.

(3) Remove poppet assembly (21) and preformed packing (22) from piping assembly (6).



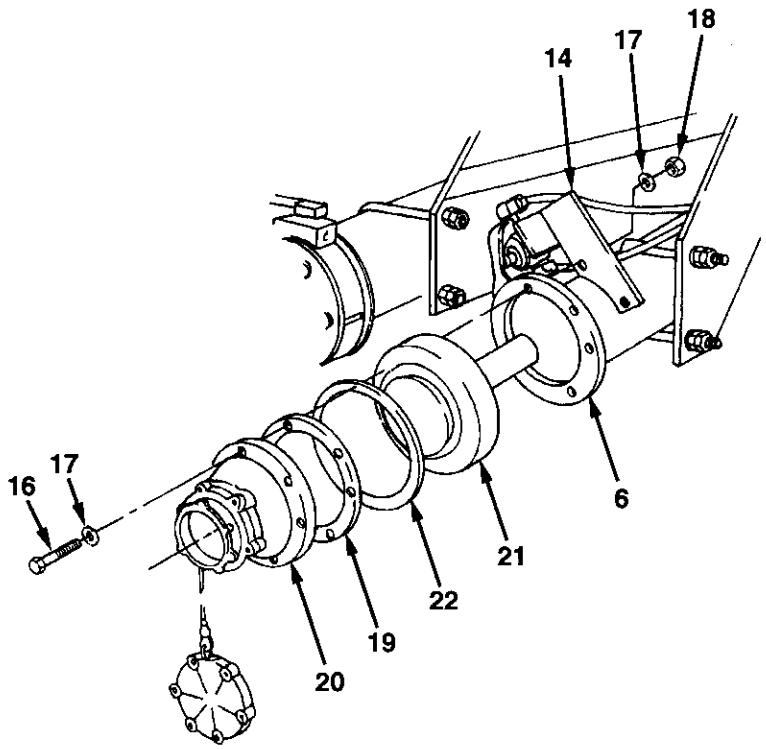
4-80. PIPING ASSEMBLY, FRONT PORT, AND REAR INLET MAINTENANCE (Con't).

d. INSTALLATION OF REAR INLET COMPONENTS

(1) Install preformed packing (22) and poppet assembly (21) on piping assembly (6) flange.

(2) Loosely install new gasket (19) and fitting (20) on piping assembly (6) flange with six screws (16), 12 washers (17), and six new locknuts (18).

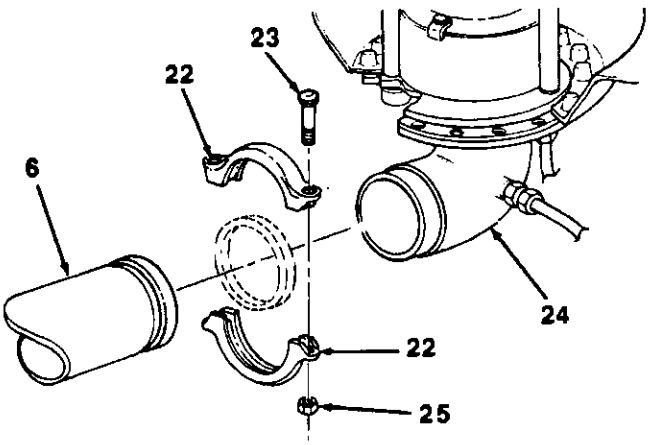
(3) Install brake interlock angle bracket (14), as marked, on rear of piping assembly (6) flange with two remaining screws (16), four washers (17), and two new locknuts (18). Tighten all eight locknuts in a crisscross pattern.



e. REMOVAL OF PIPING ASSEMBLY

(1) Disconnect precheck tubing from precheck fittings at piping assembly. Remove fittings from piping assembly (see paragraph 4-72).

(2) Disconnect control cable and tubing at emergency valve (24) (see paragraph 4-76).



4-80. PIPING ASSEMBLY, FRONT PORT, AND REAR INLET MAINTENANCE (Con't).

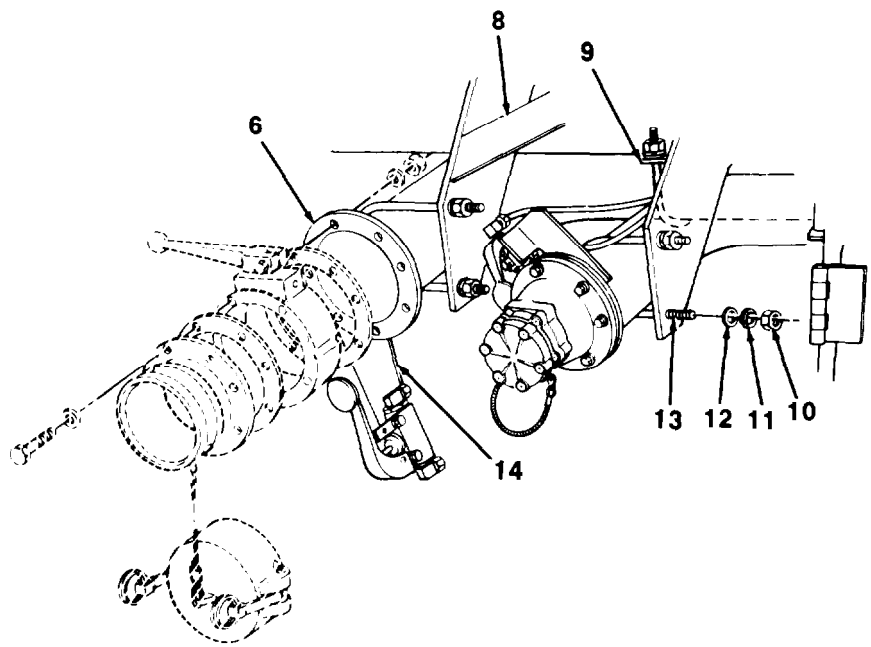
NOTE

Mark location of brake interlock angle brackets (14) to ensure installation in same position.

(3) Perform step 3 of subparagraph a and step 1 of subparagraph c to remove brake interlock angle brackets (14) from piping assembly (6) flanges.

(4) Place a suitable jackstand under piping assembly (6) at front port and rear inlet.

(5) Remove four nuts (10), lockwashers (11), washers (12), and two U-bolts (13) at piping assembly support bracket (8). Discard lockwashers.



(6) Remove two nuts (25), bolts (23), and coupling (22) from piping assembly (6) and emergency valve (24).

(7) Remove four nuts (10), lockwashers (11), washers (12), and two U-bolts (13) securing piping assembly (6) to two support brackets (9). Discard lockwashers.

CAUTION

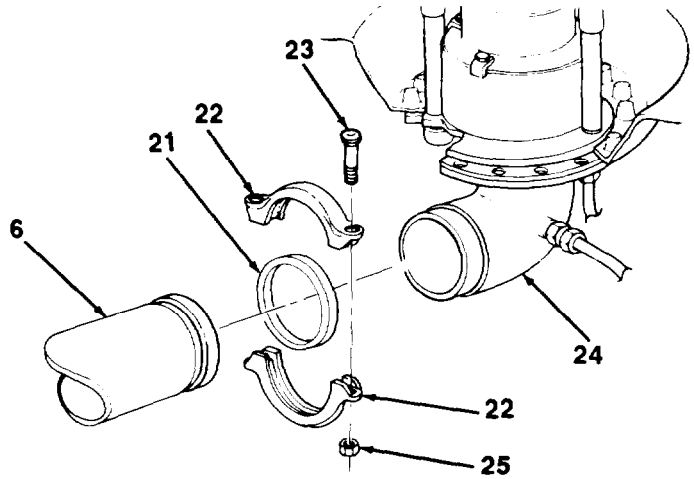
Use caution not to damage precheck tubing when removing piping assembly (6) from under semitrailer.

(8) Remove piping assembly (6) from jackstand and remove from under semitrailer.

(9) If piping assembly support bracket (8) is damaged, replace (see paragraph 4-61). If support brackets (9) are damaged, notify direct support maintenance.

4-80. PIPING ASSEMBLY, FRONT PORT, AND REAR INLET MAINTENANCE (Con't).

(10) Inspect coupling gasket (21) for damage. If damaged, replace.



f. INSTALLATION OF PIPING ASSEMBLY

(1) Grease coupling gasket (21). Ensure gasket mating surfaces on piping assembly (6) and emergency valve (24) are clean. Slide gasket onto end of piping **assembly.**

CAUTION

Use caution not to damage precheck tubing when installing piping assembly (6) from under semitrailer.

(2) Position piping assembly (6) under semitrailer so that gap between piping assembly and emergency valve (24) is no more than ¼ in. (6.4 mm).

(3) Slide gasket (21) off of piping assembly (6) and bridge gap between piping assembly and emergency valve (24).

(4) Install coupling (22) halves and two bolts (23) over gasket (21). Ensure edges of coupling are seated in grooves in piping assembly (6) and emergency valve (24).

(5) Rotate coupling (22) halves to about a 45° angle toward roadside to allow sufficient clearance to install two nuts (25). Fully tighten nuts.

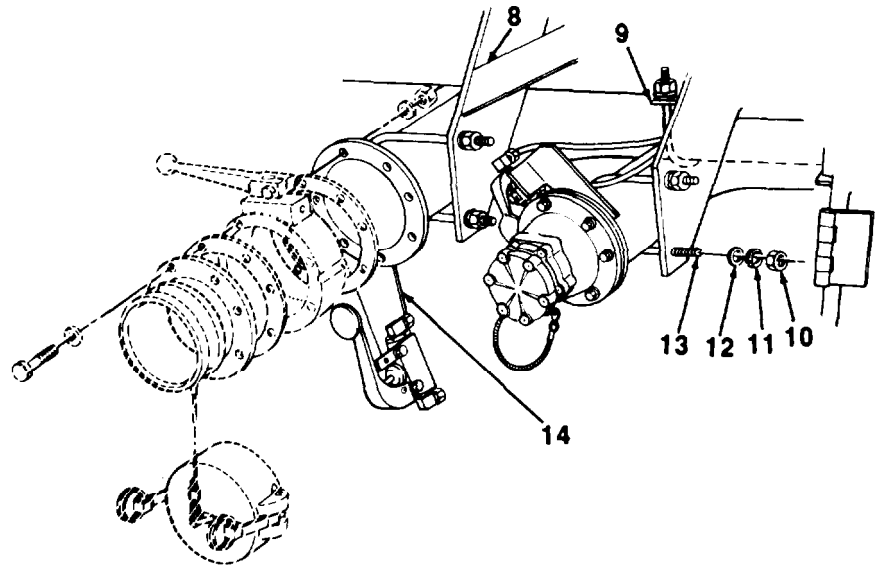
(6) Install piping assembly (6) to two support brackets (9) and to piping assembly support bracket (8) with four U-bolts (13), eight washers (12), new lockwashers (11), and nuts (10).

(7) Perform step 2 of subparagraph b and step 2 of subparagraph d to install brake interlock angle brackets (14) to piping assembly (6) flanges.

(8) Connect control cable and tubing at emergency valve (24) (see paragraph 4-76).

(9) Install precheck fittings to piping assembly (6). Connect precheck tubing to fittings (see paragraph 4-72).

4-80. PIPING ASSEMBLY, FRONT PORT, AND REAR INLET MAINTENANCE (Con't).



4-81. VAPOR VENT REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.

Materials/Parts:

- One gasket

Tools:

- Tool kit, general mechanic's

a. REMOVAL

(1) Loosen clamp (4) and disconnect vent hose (5) from vapor vent (1).

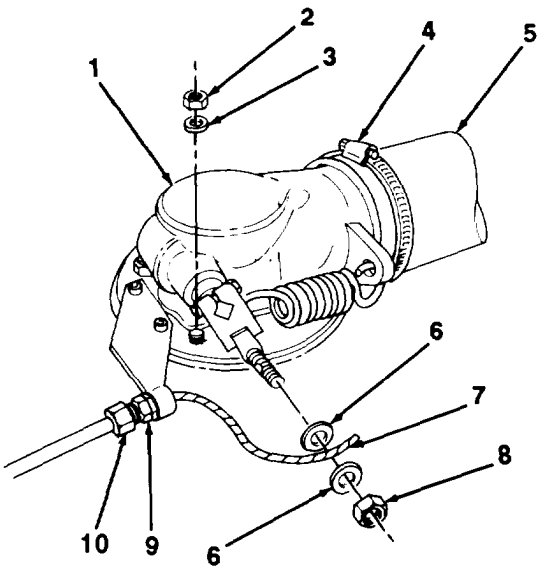
(2) Loosen nut (8) and nut (10).

(3) Remove four nuts (2) and washers (3). Remove vapor vent (1) from mounting flange.

(4) Pull vapor vent (1) away from cable (7) and remove.

(5) Remove gasket and discard.

(6) Remove straight adapter (9) from vapor vent (1).



b. INSTALLATION

(1) Install new gasket to mounting flange of vapor vent (1).

(2) Install straight adapter (9) to vapor vent (1).

(3) Position vapor vent (1) at mounting flange, threading cable (7) through straight adapter (9) and vapor vent. At vapor vent, ensure that cable is positioned between two washers (6).

(4) Take up slack in cable (7) and tighten nuts (8 and 10).

(5) Install four washers (3) and nuts (2).

(6) Connect vent hose (5) to vapor vent (1) and tighten clamp (4),

FOLLOW-ON TASKS:

- Check operation of vapor vent (see paragraph 2-2).
- Adjust cable length at vapor vent or in cabinet, as required (see paragraph 4-74).

4-82. EMERGENCY VALVE MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Disassembly
c. Cleaning and inspection
d. Assembly
e. Installation

INITIAL SETUP

Equipment Conditions:

Ref Conditions
4-68 Tank purged.
4-76 Cable and tubing disconnected from emergency valve.

Materials/Parts:

- One retaining ring
- One seal
- Two gaskets
- Eight preformed packings
- Twenty starwashers
- Dry cleaning solvent (Item 10, Appendix E)
- Grease (Item 12, Appendix E)
- Tag marker (Item 21, Appendix E)
- Antiseize tape (Item 22, Appendix E)

Personnel Required: Two

Tools:

- Tool kit, general mechanic's
- Pipe wrench
- Vise

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- Compressed air used for cleaning or drying purposes must not exceed 30 psi (207 kPa).
- Valve is spring loaded. Use extreme caution when handling it.

a. REMOVAL

NOTE

- **Emergency valve is located directly above rear air reservoir under rear of semitrailer.**
- **Tag or mark jet level sensor tubing and fittings to ensure proper installation.**

4-82. EMERGENCY VALVE MAINTENANCE (Con't).

(1) Remove two nuts (19), bolts (15). and coupling (18). Slide coupling gasket (17) forward onto piping assembly (16).

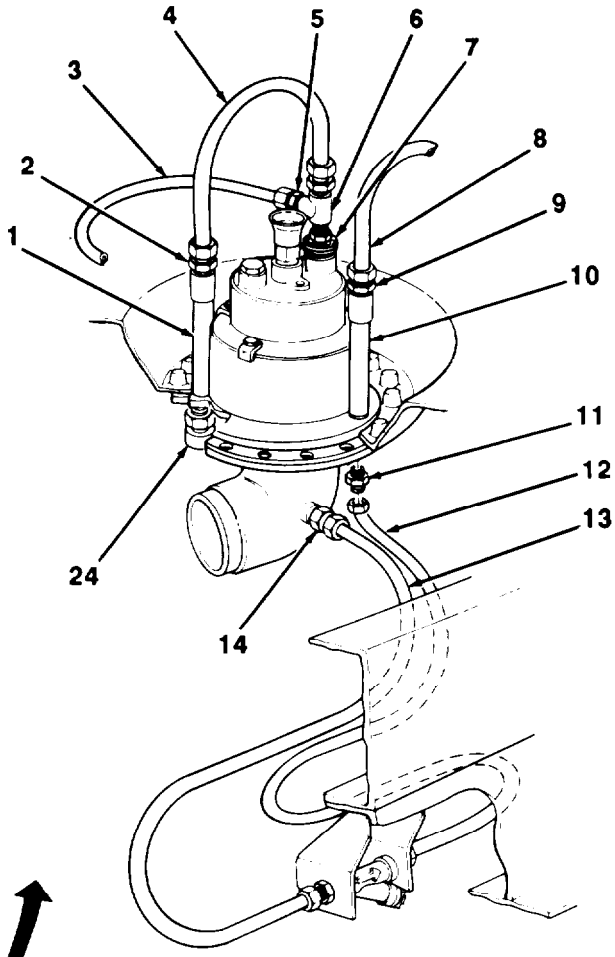
(2) Remove 16 outside bolts (2 1) and starwashers (22). Remove security bolt (26), pull back on sump drain control lever (25) and remove emergency valve through tank sump (23) opening enough to gain access to jet level sensor tubing (3 and 8). Discard starwashers.

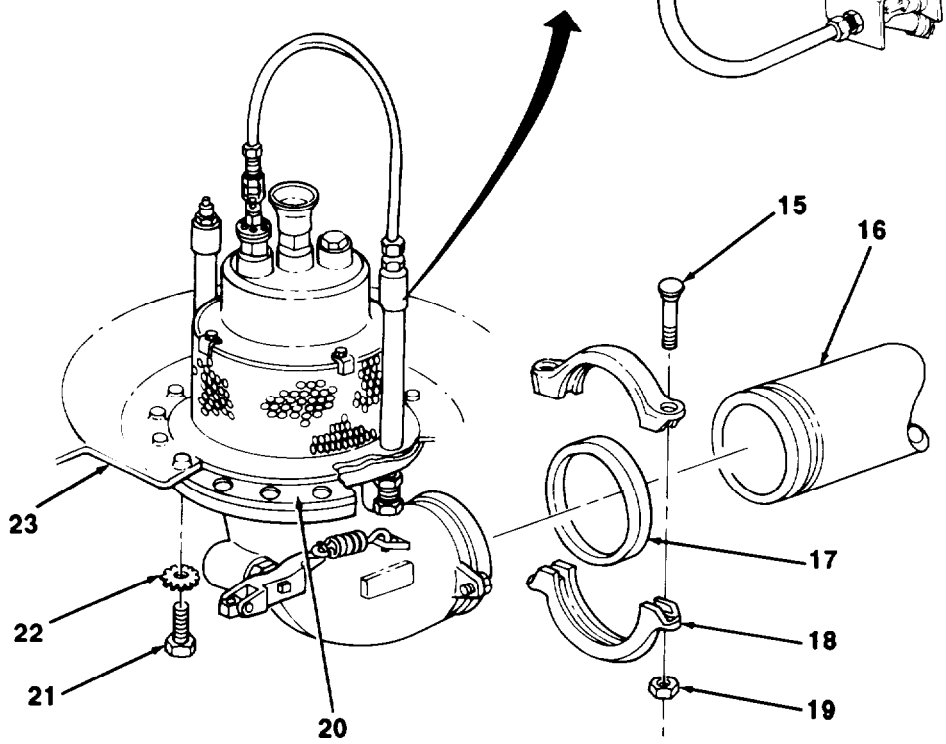
(3) Disconnect tubing (3 and 8) from straight adapters (5 and 9).

(4) Disconnect tubing (12 and 13) from straight adapters (11 and 14).

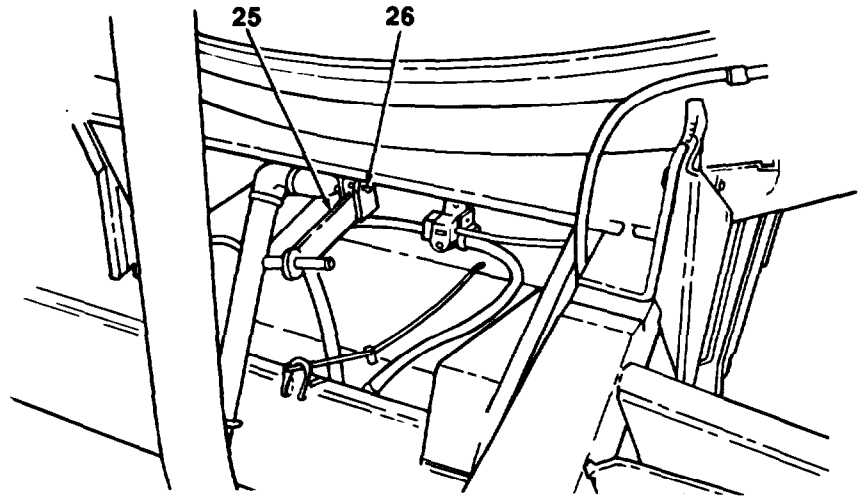
(5) Remove emergency valve from under semitrailer. Remove gasket (20) and discard.

(6) Remove coupling gasket (17) from piping assembly (16).





4-82. EMERGENCY VALVE MAINTENANCE (Con't).



b. DISASSEMBLY

WARNING

Compressed air used for cleaning purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

NOTE

Tag or mark jet level sensor tubing and fittings to ensure proper assembly.

(1) Place emergency valve on a clean work surface. Clean exterior of emergency valve with compressed air, as required.

(2) Remove nipple (10).

(3) Disconnect tubing (4) from straight adapter (2). Remove nipple (1).

(4) Remove bleeder valve (24).

(5) Remove straight adapters (11 and 14).

(6) Remove straight adapter (5), tee (6), and bushing.

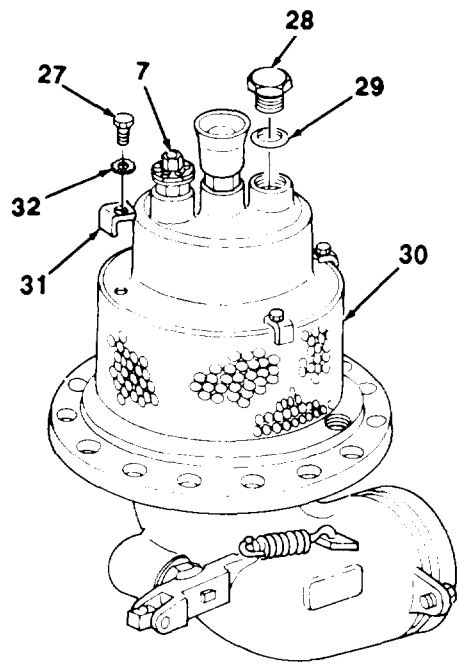
(7) Remove nipple from pilot valve (7), if damaged.

4-82. EMERGENCY VALVE MAINTENANCE (Con't).

(8) Remove four screws (27), starwashers (32), and retainers (31). Remove screen (30). Discard starwashers.

(9) Remove plug (28) and preformed packing (29). Discard preformed packing.

(10) Remove pilot valve (7) and preformed packing. Remove any residual fluid from point where pilot valve was installed. Discard preformed packing.



(11) Remove spring (43) from elbow (42) and lever (44).

(12) Scribe a line on flange of elbow (42), sump plate (40), and valve body (38) to aid in assembly alinement.

(13) Remove eight screws (46) and washers (45). Separate elbow (42) from sump plate (40).

(14) Remove sump plate (40) and preformed packings (39 and 41). Discard preformed packings.

(15) Place socket valve (36) in a vise.

WARNING

Socket valve (36) is spring loaded. Use extreme caution when handling it. Piston (33) and spring (49) must be compressed during disassembly, then carefully released. Failure to follow this warning may result in injury to personnel.

CAUTION

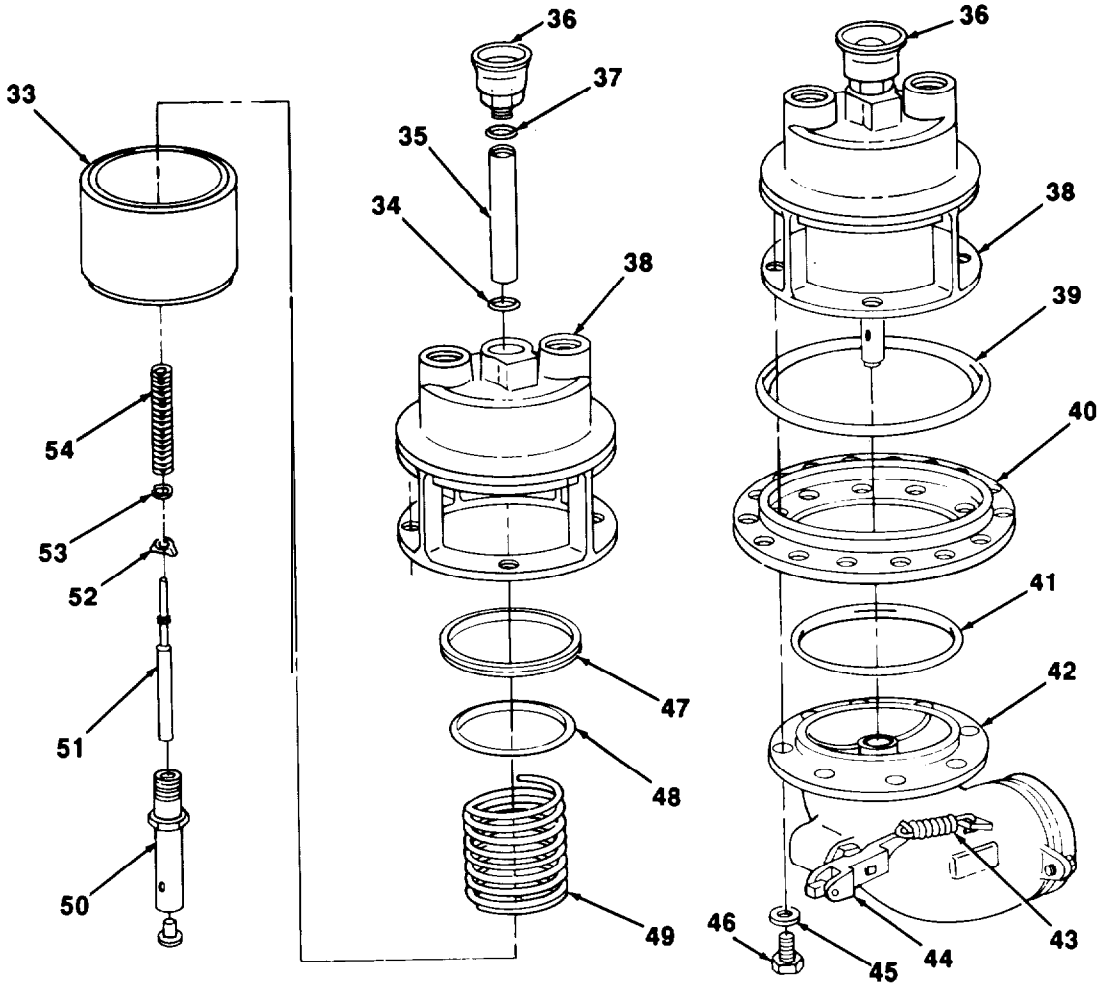
Ensure that even pressure is applied when pushing down on piston (33). If piston becomes jammed, damage to seal (47) and gray seal retainer cap (48) may result.

NOTE

Assistance is required to perform step 16.

(16) Push down on piston (33) and remove nut assembly (50). Release pressure on piston and remove metering rod (51).

4-82. EMERGENCY VALVE MAINTENANCE (Con't).



(17) Remove piston (33) and spring (49). Remove spring (54) from shaft (35). Remove gray seal retainer cap (48) and seal (47) from inner surface of valve body (38). Discard seal.

(18) Lift valve body (38) from shaft (35). Remove preformed packing (34) from valve body. Discard preformed packing.

(19) Place shaft (35) in a vise. Remove socket valve (36) and preformed packing (37) from shaft. Discard preformed packing.

(20) If damaged, remove retaining ring (53) and rod cap (52) from metering rod (51). Discard retaining ring.

4-82. EMERGENCY VALVE MAINTENANCE (Con't).

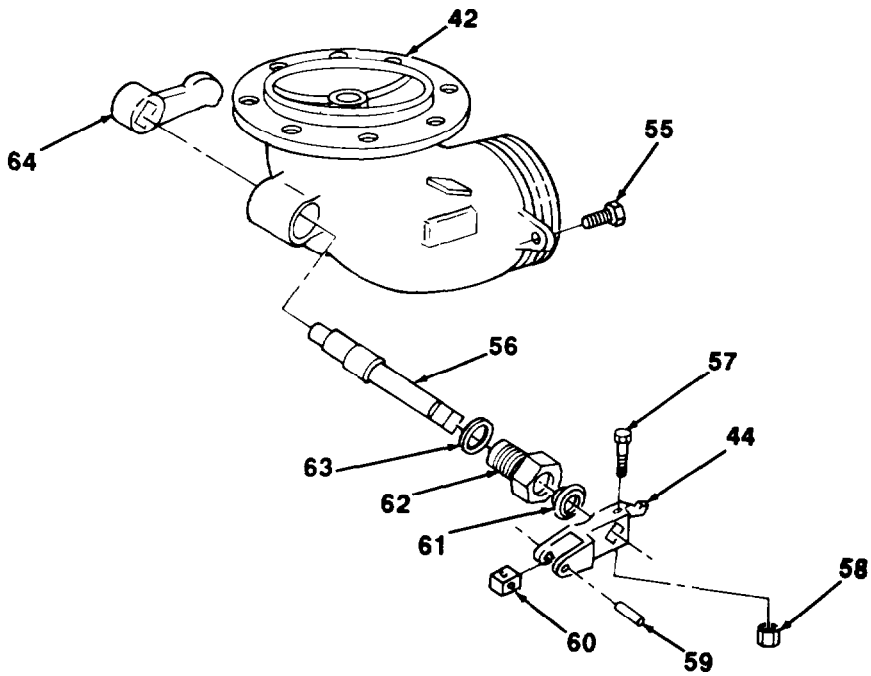
(21) Remove nut (58) and screw (57) from lever (44). Remove lever from shaft (56).

(22) If damaged, drive out spring pin (59) and remove link (60).

(23) Remove gland (62) and shaft (56) from elbow (42). Remove preformed packing (63) from gland and discard. Hold gland in a vise and tap on shaft. Remove preformed packing (61) and discard.

(24) Remove cam (64) from inside elbow (42).

(25) If damaged, remove bushing (55) from elbow (42).



4-82. EMERGENCY VALVE MAINTENANCE (Con't).

c. CLEANING AND INSPECTION

WARNING

- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38° C - 59° C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.**
- **Compressed air used for drying purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.**

(1) Clean all removed metal components with dry cleaning solvent and dry with compressed air.

(2) Inspect all removed components for bends, cracks, and sharp edges. Inspect for damaged threads. Replace all damaged components.

(3) Inspect coupling gasket. If coupling gasket is damaged, replace.

d. ASSEMBLY

NOTE

All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) If removed, install bushing (55) to elbow (42).

(2) Install new preformed packings (61 and 63) in gland (62).

(3) Apply grease to shaft (56) and install through gland (62).

(4) Position cam (64) inside elbow (42) and install shaft (56). Tighten gland (62).

(5) If removed, install link (60) in lever (44) with spring pin (59).

(6) Install lever (44) on shaft (56) with screw (57) and nut (58).

4-82. EMERGENCY VALVE MAINTENANCE (Con't).

(7) Install new preformed packing (37) and socket valve (36) in shaft (35).

(8) Install new preformed packing (34) in valve body (38).

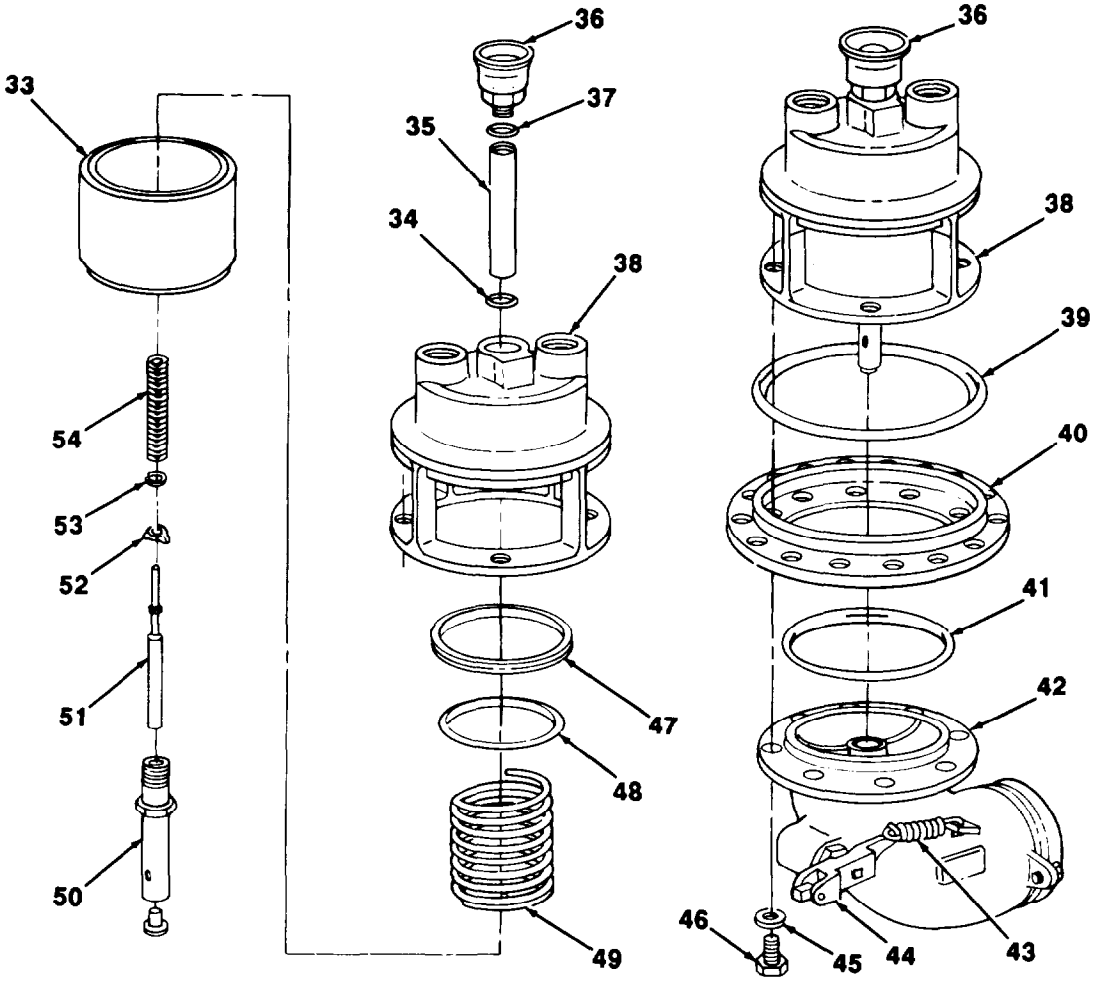
(9) Apply grease to new seal (47). Install seal and gray seal retainer cap (48) to inner surface of valve body (38).

(10) Install socket valve (36) and shaft (35) through valve body (38). Secure socket valve in a vise.

(11) Install spring (54) inside shaft (35).

(12) Install spring (49) inside valve body (38).

(13) If removed, install rod cap (52) and new retaining ring (53) on metering rod (51).



4-82. EMERGENCY VALVE MAINTENANCE (Con't).

WARNING

Socket valve (36) is spring loaded. Use extreme caution when handling it. Piston (33) and spring (49) must be compressed during assembly, then carefully released. Failure to follow this warning may result in injury to personnel.

CAUTION

Ensure that even pressure is applied when pushing down on piston (33). If piston becomes jammed, damage to seal (47) and gray seal retainer cap (48) may result.

NOTE

Assistance is required to perform steps 14 and 15.

(14) Install piston (33) in valve body (38). Push down on piston and compress spring (49).

(15) Install metering rod (51) and nut assembly (50). Tighten nut assembly until snug.

(16) Install new preformed packing (39) on outer edge of valve body (38).

NOTE

Ensure that marks made during disassembly are alined.

(17) Install sump plate (40) over valve body (38). Insert new preformed packing (41) in groove between sump plate and valve body.

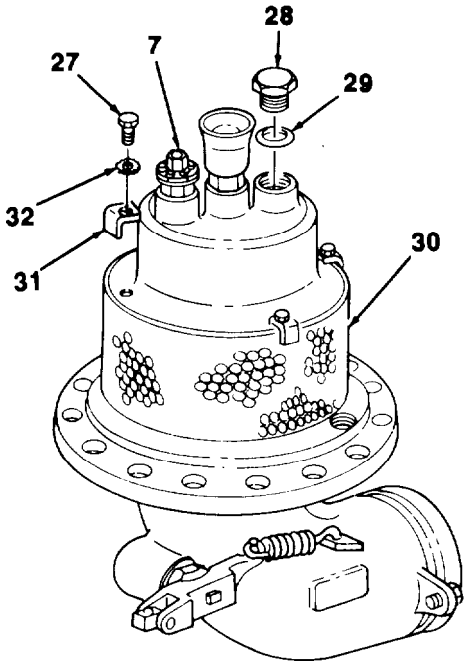
(18) Pull down on socket valve (36) and install elbow (42) on sump plate (40). Install eight washers (45) and bolts (46).

(19) Install spring (43) to lever (44) and elbow (42).

(20) Install new preformed packing (29) and plug (28).

(21) Install new preformed packing and pilot valve (7).

(22) Install screen (30) with four retainers (31), new starwashers (32), and screws (27).



NOTE

Ensure that jet level sensor tubing and fittings are assembled as tagged or marked.

(23) If removed, install nipple to pilot valve (7).

4-82. EMERGENCY VALVE MAINTENANCE (Con't).

(24) Install bushing, tee (6), and straight adapter (5).

(25) Install straight adapters (11 and 14).

(26) Install bleeder valve (24).

(27) Install nipple (1). Connect tubing (4) to straight adapter (2).

(28) Install nipple (10).

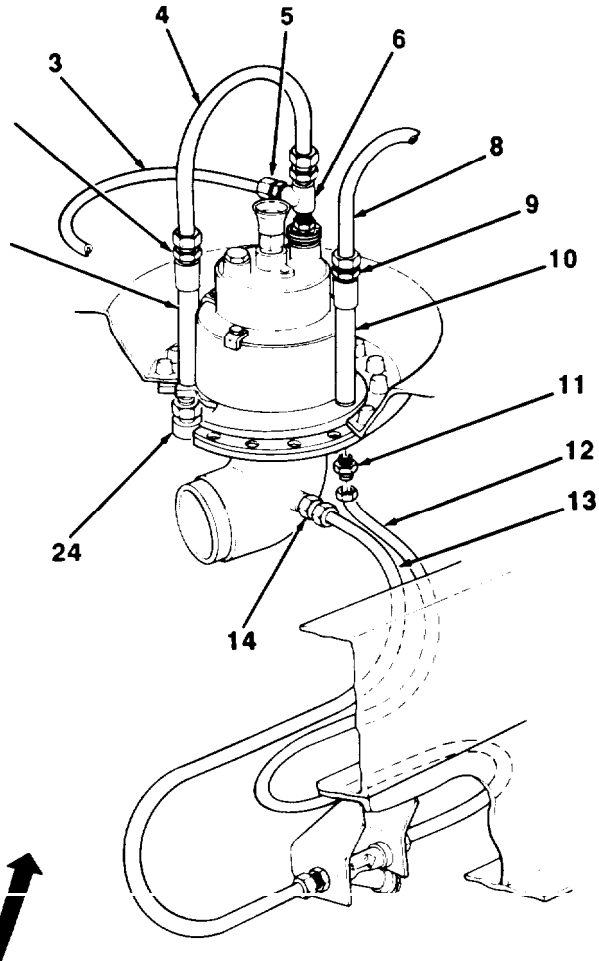
e. INSTALLATION

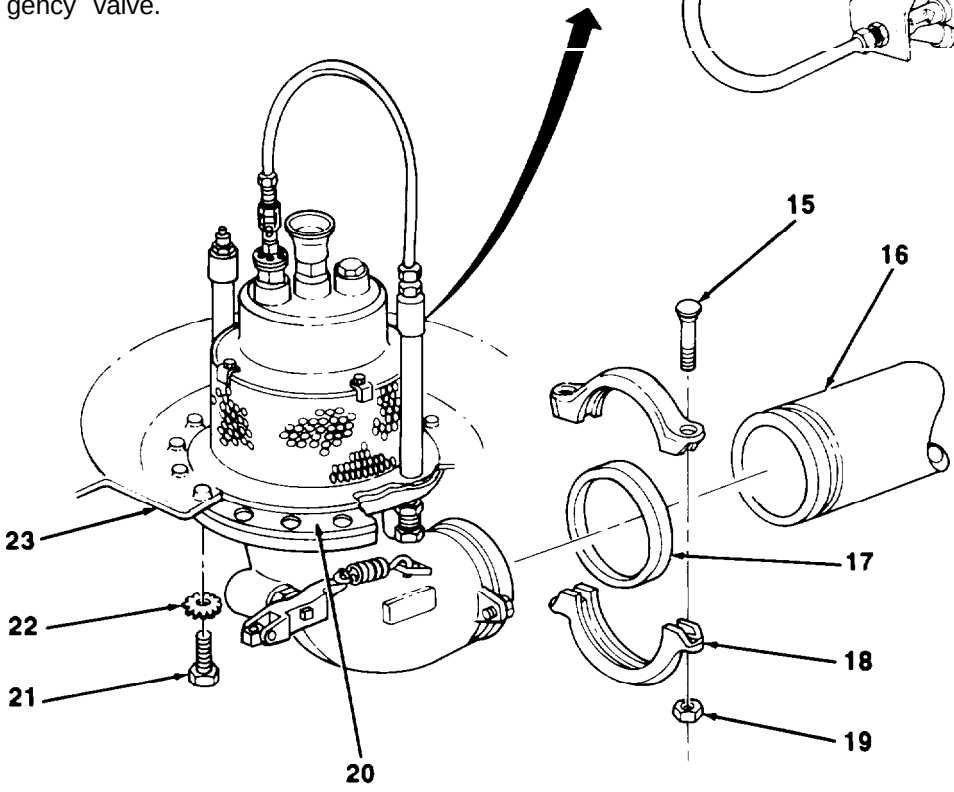
NOTE

All male threads of fittings should be coated with antiseize tape if not already factory-coated with an antiseize compound.

(1) Ensure that gasket mating surfaces on piping assembly (16) and emergency valve are clean. Grease coupling gasket (17). Slide coupling gasket onto end of piping assembly.

(2) Install new gasket (20) to emergency valve.





4-82. EMERGENCY VALVE MAINTENANCE (Con't).

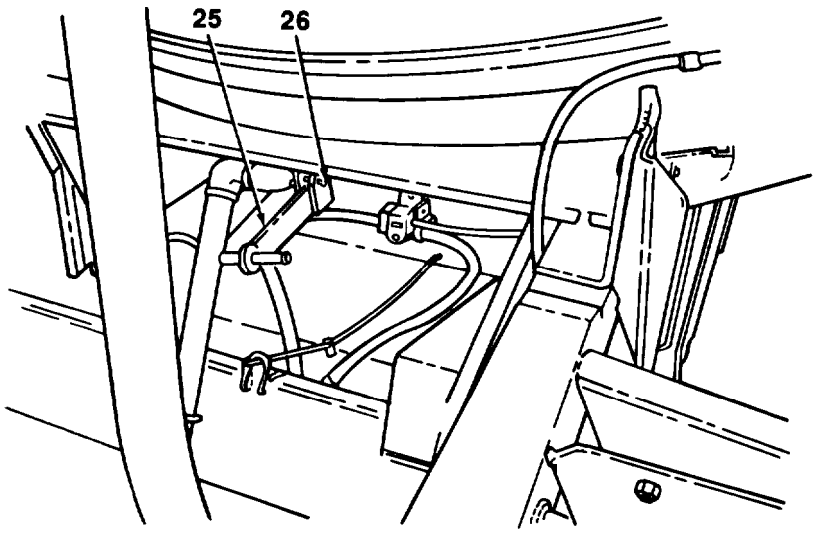
NOTE

Ensure that mating surfaces at tank sump (23) are clean.

(3) Raise emergency valve into position above rear air reservoir. Connect jet level sensor tubing (3 and 8) as tagged, to straight adapters (5 and 9). Remove any material used to tag jet level sensor tubing and fittings.

(4) Pull back on sump drain control lever (25) and install emergency valve with 16 new star-washers (22) and bolts (21). Push on sump drain control lever to close. Install security bolt (26).

(5) Connect tubing (12 and 13) to straight adapters (11 and 14).



(6) Pull coupling gasket (17) off piping assembly (16) and bridge gap between piping assembly and emergency valve.

(7) Install coupling (18) halves and two bolts (15) over coupling gasket (17). Ensure that edges of coupling are seated in grooves of piping assembly (16) and emergency valve.

(8) Rotate coupling (18) to about a 45° angle toward roadside to provide sufficient clearance to install two nuts (19). Install two nuts and fully tighten.

FOLLOW-ON TASKS:

Connect cable and tubing to emergency valve (see paragraph 4-76).

4-83. PILOT VALVE MAINTENANCE.

THIS TASK COVERS

a. Removal
b. Disassembly
c. Cleaning and Inspection
d. Assembly
e. Bench Test
f. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-70	Jet level sensor tubing and fittings disconnected from pilot valve.

Materials/Parts:

- One preformed packing
- One retaining ring
- Dry cleaning solvent (Item 10, Appendix E)

Tools:

- Tool kit, general mechanic's

General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- Compressed air used for drying or testing purposes must not exceed 30 psi (207 kPa).

a. REMOVAL

Remove pilot valve (1) from emergency valve (13). Remove preformed packing (12) and discard.

b. DISASSEMBLY

(1) Remove six lockscrews (4) and washers (5).

(2) Place access cover (2) in a vise. Tap on valve flange (10) and remove access cover and diaphragm (6) from valve flange.

(3) Remove retaining ring (7) and discard.

(4) Remove valve disk (11), washer (8), and spring (9).

4-83. PILOT VALVE MAINTENANCE (Con't).

c. CLEANING AND INSPECTION

WARNING

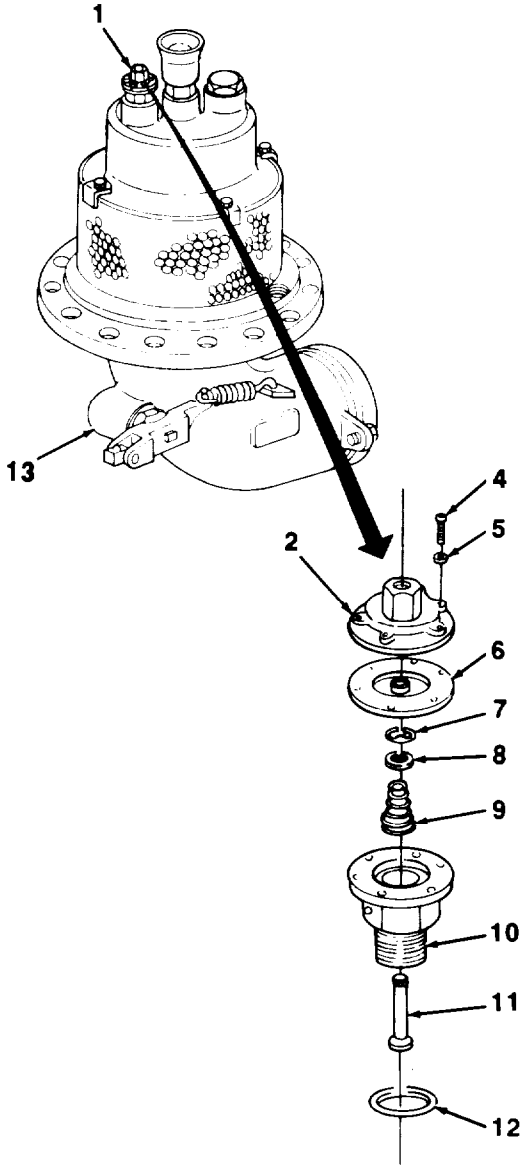
- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100° F-138° F (38° C-59° C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.**

- **Compressed air used for drying purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.**

(1) Clean all removed components with dry cleaning solvent.

(2) Use compressed air to thoroughly dry components and to clear all passages.

(3) Replace any damaged components.



d. ASSEMBLY

(1) Install valve disk (11), spring (9), and washer (8) inside valve flange (10). Compress valve disk and install new retaining ring (7) in valve disk groove.

(2) Install diaphragm (6) over valve flange (10) with center cup of diaphragm fitted over end of valve disk (11).

(3) Install access cover (2) with six washers (5) and lockscrews (4). Ensure that lockscrews are securely and evenly tightened.

4-83. PILOT VALVE MAINTENANCE (Con't).

e. BENCH TEST

WARNING

Compressed air used for testing purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

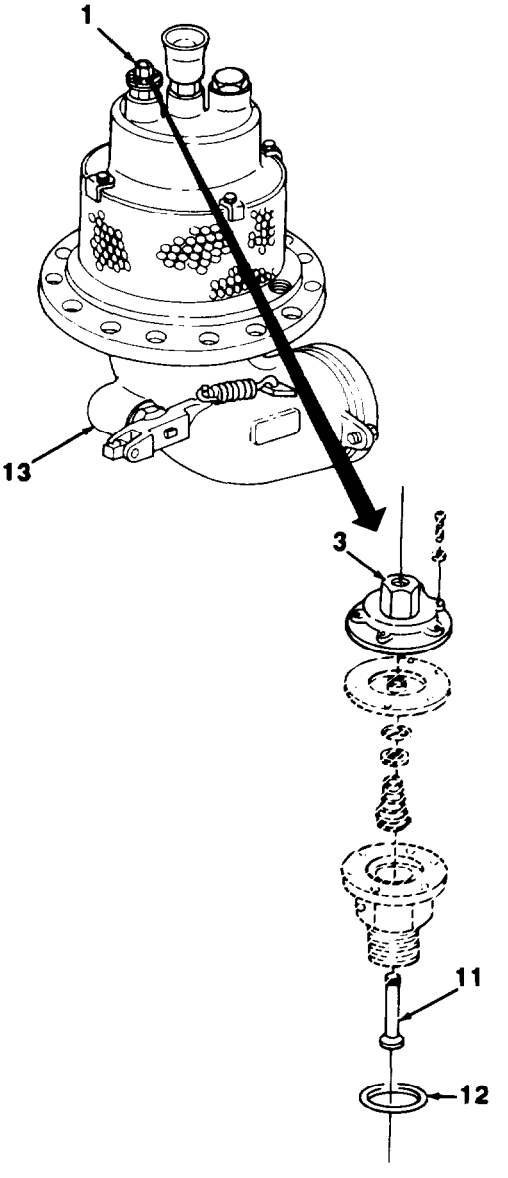
NOTE

Bench test should be performed after repair of pilot valve (1) to ensure that valve will operate properly.

(1) Apply clean compressed air through top port (3) of pilot valve (1). Check that pilot valve opens. Valve disk (11) will be pushed down if pilot valve is open.

(2) Apply clean compressed air through top port (3) of pilot valve (1). Check for leaks. No leakage in pilot valve is allowed.

(3) If pilot valve (1) does not open with compressed air applied through top port (3), or if there is any leakage, replace pilot valve.



f. INSTALLATION

install new preformed packing (12) and pilot valve (1) to emergency valve (13).

FOLLOW-ON TASKS:

Connect fittings and jet level sensor tubing to pilot valve (see paragraph 4-70).

4-84. WINTERIZATION OF BOTTOM LOADING SYSTEM.

THIS TASK COVERS

Winterization

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.

Tools:

- Tool kit, general mechanic's
- Shop equipment, automotive maintenance and repair, organizational maintenance, common no. 1
- Battery filler syringe

Materials/Parts:

- Antifreeze (Item 1, Appendix E)
- Tag marker (Item 21, Appendix E)

General Safety Instructions:

- Compressed air used for drying purposes must not exceed 30 psi (207 kPa).

4-84. WINTERIZATION OF BOTTOM LOADING SYSTEM (Con't).

WINTERIZATION

NOTE

Tag tubing (6, 7, 11, 14, and 15) to ensure proper installation.

(1) If installed, remove nut (17) from bleeder valve (18).

(2) Loosen nuts (8, 9, 12, 13, and 16) and disconnect tubing (6, 7, 11, 14, and 15). Drain all liquid from tubing.

(3) Remove pilot valve (1) from emergency valve (4). Separate pilot valve from tee (10). Drain pilot valve completely.

WARNING

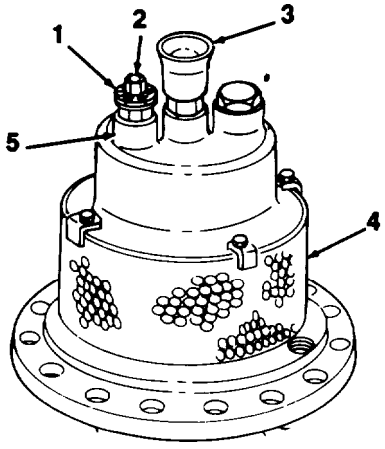
Compressed air using for drying purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.

(4) Use compressed air to dry all tubing (6, 7, 11, 14, and 15) and pilot valve (1).

(5) Use a clean syringe to remove all liquid from socket valve (3) and port (5) where pilot valve (1) was installed.

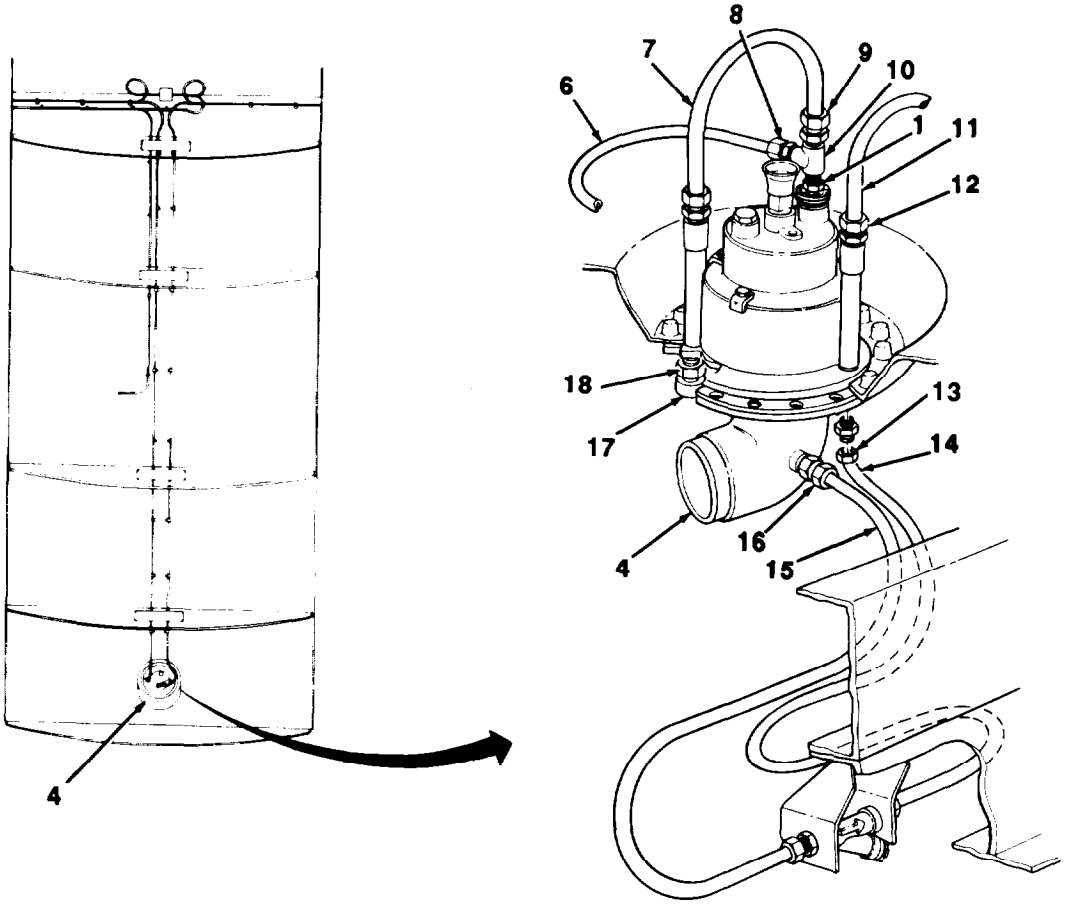
(6) Fill syringe with antifreeze and install antifreeze into port (5) until full.

(7) Install pilot valve (1). Fill port (2) of pilot valve with antifreeze.



(8) Connect tubing (6, 7, 11, 14, and 15) as tagged and tighten nuts (8, 9, 12, 13, and 16). Install nut (17) on bleeder valve (18).

4-84. WINTERIZATION OF BOTTOM LOADING SYSTEM (Con't).



Section XV. PAINTING AND IDENTIFICATION MARKING

Paragraph Number	Title	Page Number
4-85	Painting and Identification Marking	4-284

4-85. PAINTING AND IDENTIFICATION MARKING.

a. *PAINTING.* Refer to TM 43-0139 for instructions on painting the M1062 7500 Gallon Fuel Tank Semitrailer.

b. *STENCIL* MARKINGS.

(1) If stencil markings are not legible, stencil must be repainted. Paint numerals or letters in simple block type, using black paint.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(2) Before applying paint, clean all surfaces to be stenciled with dry cleaning solvent (Item 10, Appendix E). Dry thoroughly.

WARNING

- **Avoid excessive inhalation of vapors when stenciling. All stenciling procedures must be performed in a well-ventilated area. A fire extinguisher must be on hand. Failure to follow this warning may result in injury to personnel.**
- **Personnel must wear protective face masks if spraying paint. If face masks are not available, apply paint with brush only. Personnel must stay clear of work area where spray painting is taking place. Failure to follow this warning may result in injury to personnel.**

(3) Apply paint to stencil with dabbing motion.

(4) Allow paint to dry for 24 hours.

Section XVI. PREPARATION FOR STORAGE OR SHIPMENT

Paragraph Number	Title	Page Number
4-86	General	4-285
4-87	Preparation for Shipment	4-285
4-88	Loading and Movement	4-288
4-89	Limited Storage	4-289

4-86. GENERAL.

This section describes preparation of the M1062 7500 Gallon Fuel Tank Semitrailer for shipment and for limited storage.

4-87. PREPARATION FOR SHIPMENT.

a. GENERAL.

(1) This paragraph provides instructions on preserving and otherwise protecting the semitrailer for shipment.

(2) Protection of semitrailer, tank interior, and all valves must be sufficient to protect against deterioration and physical damage.

b. *CLEANING.*

(1) Clean all dirt and foreign material from exterior of semitrailer using cleaning agents specified in paragraph 2-8. After cleaning, dry semitrailer to remove excess cleaning solutions or moisture. Use clean, dry, lint-free rags (Item 18, Appendix E).

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, **eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100oF-138°F (36°C-59°C). If you become dizzy** while **using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.**

(2) Clean excess oil or grease at lubrication points or grease fittings with dry cleaning solvent (Item 10, Appendix E).

4-87. PREPARATION FOR SHIPMENT (Con't).

c. LUBRICATION AND MAINTENANCE.

(1) Lubricate semitrailer according to instructions found in Chapter 3, Section I, Clean excess grease and oil from lubrication points and grease fittings after lubrication and before processing.

(2) Perform Quarterly (Q) PMCS according to instructions found in Chapter 4, Section Ill.

d. *PRESERVATION OF EXTERIOR.*

NOTE

Grease or oil used as a preservative is effective for only a few days. Equipment so protected must be watched for signs of corrosion.

(1) Coat all unpainted, exposed, machined metal surfaces on exterior of semitrailer with corrosion preventive compound (Item 8, Appendix E). If preservative listed is not available, oil or grease (as specified in Chapter 3, Section I) may be used.

(2) If semitrailer is being shipped overseas, additional preservatives may be required.

e. PRESERVATION OF TANK INTERIOR AND VALVES.

(1) **Levels of Preservation.** There are two levels of preservation when processing tank for storage or shipment:

(a) Level A preservation is required for domestic or overseas shipments and any storage outside of buildings in excess of 90 days from the date of processing. Periodic care and preservation are required during storage.

(b) Level B preservation is used when there is limited processing for immediate use shipment, and for domestic or overseas shipments (excluding open deck loading and any storage not to exceed 90 days from date of processing).

(2) **Preservation By Purging.**

(a) Preservation by purging (see paragraph 4-68) satisfies the requirements of both Level A and Level B preservation.

(b) If tank is purged prior to storage or shipment, no further preservation is required to protect tank interior and valves.

(c) Preservation by purging is the preferred method when safety regulations, pertaining to the mode of shipment, require that the semitrailer be free of explosive vapors.

(3) **Level A Preservation.**

(a) Ensure that tank is fully drained and clean. Refer to Table 8-1 of FM 10-71 to determine if lubricating oil to be added as preservative is compatible with fuel previously carried.

(b) Fill tank with 30-55 gal. (115-208 I) of lubricating oil (Item 14, Appendix E). Drain tank.

(c) Close all valves and sump drain. Close manhole and bolt closed through padlock loop. Peen bolt end to deter pilferage.

4-87. PREPARATION FOR SHIPMENT (Con't).

(4) Level B Preservation.

(a) If semitrailer has been hauling diesel fuel (Item 11, Appendix E), add stabilizer additive (Item 20, Appendix E) per manufacturer's instructions to diesel fuel remaining in tank.

(b) Close all valves and sump drain. Close manhole and bolt closed through padlock loop. Peen bolt end to deter pilferage.

f. *PACKAGING/PACKING.*

(1) Cover lenses of semitrailer lights with greaseproof barrier material (Item 2, Appendix E) and cover with masking tape (Item 26, Appendix E).

(2) Cover electrical receptacles with masking tape (Item 26 Appendix E) or with plastic caps which will afford the same degree of protection.

(3) Secure dust caps to front port and rear vapor collection adapter by wrapping tie-straps through loops.

(4) Ensure that ground rod, gage stick, and both transfer hoses are stowed in their stowage tubes. Secure tube doors closed with bolt and nut. Peen bolt end to deter pilferage.

(5) Wrap reducer spools inside cabinet with paperboard (Item 17, Appendix E). This will ensure a snug fit when reducers are mounted. Mount reducers on spools.

(6) Remove grabhandles from their mounting brackets (see paragraph 2-22). Reinstall the securing lockpins in mounting bracket holes. Wrap grabhandles in paperboard (Item 17, Appendix E) and tape (Item 25, Appendix E). Stow grabhandles inside cabinet.

(7) Wrap fire extinguishers with their covers in paperboard (Item 17, Appendix E) and tape (Item 25, Appendix E). Place each fire extinguisher in a separate shipping box conforming to PPP-B-636, Grade W5c, and secure with tape (Item 25, Appendix E). Stow boxes inside cabinet.

(8) Wrap remaining Basic Issue Items (chock blocks, jacking block, and lug wrench) in paperboard (Item 17, Appendix E), tape (Item 25, Appendix E), and stow inside cabinet.

(9) Bolt cabinet door closed. Peen bolt end to deter pilferage.

(10) Ensure that ground boards are securely stowed in mounting brackets with handles downward. Strap handles to landing leg knee braces.

g. *MARKING.* Provide any necessary identification and precautionary markings in accordance with MIL-STD-129.

h. *SHIPMENT OF ARMY DOCUMENTS.* Prepare all Army shipping documents accompanying semitrailer in accordance with DA Pam 738-750.

4-87. PREPARATION FOR SHIPMENT (Con't),

i. *SHIP AND RAIL MOVEMENT.*

WARNING

Explosive vapor level measurements must be taken at specified intervals prior to semitrailer ship and rail movement. Failure to follow this procedure may result in serious injury or death to personnel.

(1) After semitrailer has been purged, explosive vapor level measurements must be taken by trained personnel and must be LESS than 20% lower explosive level (LEL), This measurement is to be taken every 12 hours after purging, until semitrailer is shipped. One-half hour prior to loading, a reading MUST be taken. Tank must be repurged if vapor levels reach 20% of the LEL.

(2) Prior to shipping by ship or rail, semitrailer must be placed in a covered and ventilated area with manholes open.

(3) Hazardous cargo certification must be provided in accordance with TM 38-250 (AFR 71-4). Certification of this hazardous material shall be accomplished on DD Form 1387-2 by the qualified specialist or technician who actually prepared and inspected the semitrailer for shipment.

(4) Loading, blocking, tie-down, and bracing on railcars will be accomplished with technical guidance from the Installation Transportation Officer (ITO) and in accordance with the Association of American Railroad (AAR) published *Rules Governing the Loading of Department of Defense Material on Open-Top Cars.*

j. *WATER MOVEMENT.*

(1) The Installation Transportation Officer is responsible for initial coordination with the Port of Embarkation (POE) to determine special requirements and for providing the shipper with port of call information.

(2) The Installation Transportation Officer must coordinate with unit personnel for any special equipment preparation or markings required by the POE.

4-88. LOADING AND MOVEMENT.

WARNING

The M1062 Tank Semitrailer has not been designed for air transportability. Any attempt to transport the semitrailer by air may result in an accident, causing damage to semitrailer or serious injury or death to personnel.

a. After semitrailer is loaded, ensure that both air reservoirs are empty by pulling on draincock cable (see paragraph 2-2).

b. Ensure that both air couplings are protected by dummy couplings (see paragraph 1-7, Front View).

4-89. LIMITED STORAGE.

a. GENERAL. Commanders are responsible for ensuring that all semitrailers issued or assigned to their command are maintained in a serviceable condition and properly cared for, and that personnel under their command comply with technical instructions. Lack of time, trained personnel, or proper tools may result in a unit's being incapable of performing maintenance for which it is responsible. In such cases, unit commanders may, with the approval of major commanders, place a semitrailer that is beyond the maintenance capability of the unit in administrative storage or return it to supply agencies.

b. LIMITED STORAGE INSTRUCTIONS.

(1) Time Limitations. Administrative storage is restricted to a period of 90 days and must not be extended unless semitrailer is reprocessed.

(2) Storage Procedure. Perform disassembly only as required to clean and preserve exposed surfaces. Except as otherwise noted, and to the maximum extent consistent with safe storage, place semitrailer in administrative storage in as nearly a completely assembled condition as practicable. Install and adjust equipment so that the semitrailer may be placed in service and operated with minimum delay.

(a) The semitrailer should be stored on level ground in the most favorable location available, preferably one which affords protection from exposure to the elements and from pilferage.

(b) Perform Quarter/y (Q) PMCS on semitrailers intended for administrative storage (see Chapter 4, Section III).

(c) Provide access to semitrailer to permit inspection, servicing, and subsequent removal from storage.

(3) Inspection In Storage.

(a) Visual inspection of semitrailer in administrative storage must be conducted at least once a month, and immediately following hard rain, heavy snowstorm, windstorm, or other severe weather conditions. Perform disassembly as required to fully ascertain the extent of any deterioration or damage found. A record of these inspections must be maintained for each semitrailer in administrative storage, attached in such a manner as to protect the record from the elements.

(b) When rust or deterioration is found on a critical or machined surface, reprocessing for administrative storage must be immediately accomplished. Repair any damage caused to semitrailer by severe weather conditions. Deterioration or damage to on-equipment materiel (OEM) must be repaired as necessary. Painted surfaces showing evidence of deterioration must be thoroughly cleaned, dried, and repainted, using paint of the same quality and color as the original paint.

CHAPTER 5
DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Section I. AXLE ASSEMBLY MAINTENANCE

Paragraph Number	Title	Page Number
5-1	Axle Assembly Replacement	5-1

5-1 AXLE ASSEMBLY REPLACEMENT.

THIS TASK COVERS

a. Removal of Axle Assembly
b. Removal of Axle-mounted Components
c. Installation of Axle-mounted Components
d. Installation of Axle Assembly

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
2-11	Wheels chocked.
4-40	SERVICE and EMERGENCY air lines disconnected from brake chambers.

Tools:

- Tool kit, general mechanic's
- Tool kit, welder's
- Torque multiplier
- Torque wrench
- Two floor jacks
- Two jackstands

General Safety Instructions:

- Axle assembly is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal and installation.

References: TM 9-237

Personnel Required: TWO

5-1. AXLE ASSEMBLY REPLACEMENT (Con't).

a. REMOVAL OF AXLE ASSEMBLY

NOTE

Front and rear axle assemblies (6) are removed the same.

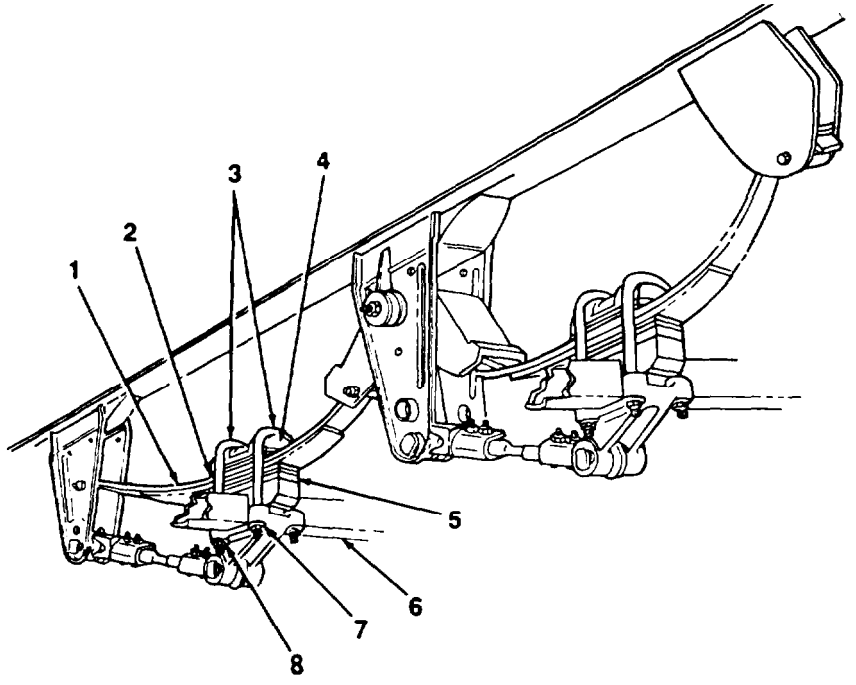
(1) Place a floor jack under middle of affected axle assembly (6). Raise axle assembly and remove all tires (see paragraph 4-45).

(2) Remove four nuts (8), washers (7), and two U-bolts (3) from each end of axle assembly (6).

WARNING

Axle assembly (6) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel.

(3) Lower axle assembly (6) on floor jack and remove from under semitrailer.



b. REMOVAL OF AXLE-MOUNTED COMPONENTS

WARNING

Axle assembly (6) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance when raising. Failure to follow this warning may result in serious injury to personnel.

(1) Raise axle assembly (6) on floor jack and support with suitable jackstands. Remove floor jack.

(2) Remove wheel and drum assemblies, wheel bearings, and oil seals (see paragraphs 4-46).

5-1. AXLE ASSEMBLY REPLACEMENT (Con't).

(3) Remove brake shoes (see paragraph 4-35).

(4) Remove slack adjusters and camshafts (see paragraphs 4-37 and 4-36).

(5) Remove air line tie strap from axle. Remove brake chambers (see paragraph 4-40).

c. INSTALLATION OF AXLE-MOUNTED COMPONENTS

(1) Install brake chambers (see paragraph 4-40). Secure air line tie strap around axle.

(2) Install camshafts and slack adjusters (see paragraphs 4-36 and 4-37).

(3) Install brake shoes (see paragraph 4-35).

(4) Install wheel and drum assemblies, wheel bearings, and oil seals (see paragraph 4-46).

NOTE

Spacers (5) are NOT used on rear axle.

(5) If working on a front axle, position two spacers (5). Weld spacers to axle assembly (6).

WARNING

Axle assembly (6) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance when raising. Failure to follow this warning may result in serious injury to personnel.

(6) Place a suitable floor jack under middle of axle assembly (6). Raise axle assembly enough to remove jackstands.

d. INSTALLATION OF AXLE ASSEMBLY

WARNING

Axle assembly (6) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance when raising. Failure to follow this warning may result in serious injury to personnel.

(1) Position axle assembly (6), supported on floor jack, under semitrailer. Raise axle assembly until it contacts underside of springs (1). Aline holes in axle with spring center bolts,

NOTE

- **At each spring (1), ensure that saddle (4) and delrin liner (2) are in position.**
- **U-bolts (3) for rear axle assembly (6) are shorter than U-bolts for front axle assembly.**

(2) At each spring (1), install two U-bolts (3), four washers (7), and nuts (8).

(3) Torque four nuts (8) in a diagonal sequence to 150 lb.-ft. (203 N•m). Torque same four nuts in same diagonal sequence to 360 lb.-ft. (488 N•m).

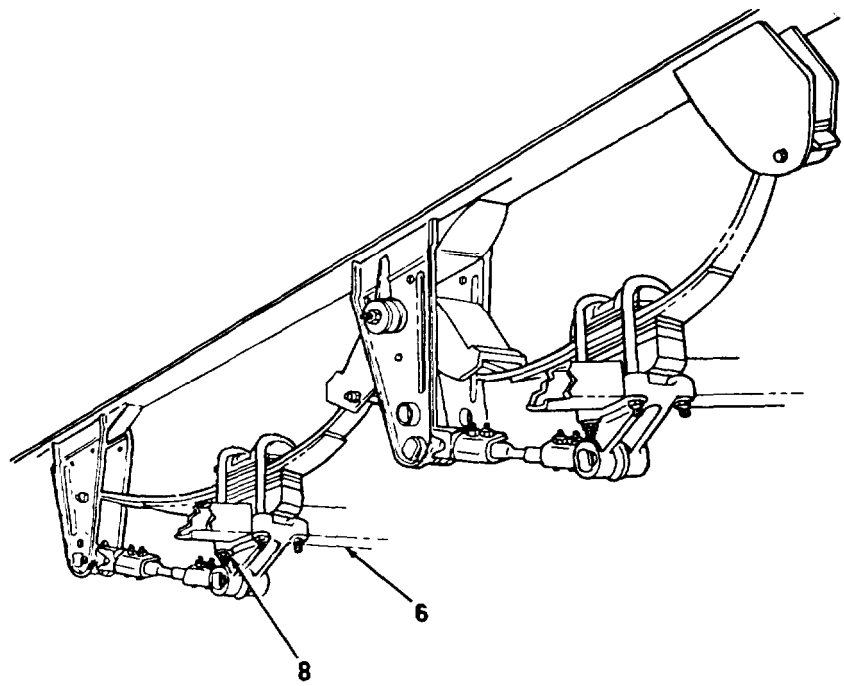
5-1. AXLE ASSEMBLY REPLACEMENT (Con't).

NOTE

Paint, rust, or other contaminants can give a false torque reading. Step 4 must be performed to ensure a proper torque.

(4) Back off four nuts (8) two turns. Torque to 360 lb.-ft. (488 N•m).

(5) Install tires (see paragraph 4-45). Lower axle assembly (6) and remove floor jack.



FOLLOW-ON TASKS:

- Connect SERVICE and EMERGENCY air lines to brake chambers (see paragraph 4-40).
- Check axle alinement (see paragraph 4-31).

Section II. BRAKE SYSTEM MAINTENANCE

Paragraph Number	Title	Page Number
5-2	Drum Repair	5-5
5-3	Brake Shoe Repair	5-7
Table 5-1	Drum Diameters	5-6

5-2. DRUM REPAIR.

THIS TASK COVERS

a. Drum Repair

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-46	Drum removed.

Tools:

- Drum lathe
- Dial Indicator
- Micrometer

Materials/Parts:

- Abrasive cloth (Item 5, Appendix **E)**

General Safety Instructions:

- DO NOT use a drum that exceeds maximum wear specifications.

a. DRUM REPAIR

(1) If drum has slight scores or grooves, polish with abrasive cloth.

WARNING

DO NOT use a drum that exceeds maximum wear specifications. Failure to follow this warning may result in brake failure and serious injury or death to personnel.

(2) Measure inside diameter of drum. If inside diameter of drum measures more than 16.62 in. (42.21 cm), discard drum (see Table 5-1).

(3) Measure drum for taper. Maximum allowable taper is 0.010 in. (0.25 mm) measured from outside edge of base of drum to brake shoe lining contact surface.

(4) Check for out-of-round condition. Measure drum at front and rear of machined surface at a minimum of four locations (45 degrees apart) and record the readings. A maximum of 0.015 in. (0.38 mm) out-of-round is allowed.

(5) If drum exceeds taper or out-of-round allowances, machine drum. DO NOT machine drum to more than 16.58 in. (42.11 cm) in diameter (see Table 5-1).

5-2. DRUM REPAIR (Con't).

Table 5-1. Drum Diameters.

Original	Maximum Machining	Discard
16.50 In. (41.91 cm)	16.58 in. (42.11 cm)	16.62 In. (42.21 cm)

FOLLOW-ON TASKS:

Install drum (see paragraph 4-46).

5-3. BRAKE SHOE REPAIR.

THIS TASK COVERS

a. Removal of Brake Shoe Linings
b. Cleaning and Inspection
c. Installation of Brake Shoe Linings

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-35	Brake shoes removed.

Tools:

- Tool kit, general mechanic's
- C-clamps
- Drill & No. 29 drill bit
- Rivet gun

Materials/Parts:

- Forty-eight rivets
- Dry cleaning solvent (Item 10, Appendix E)

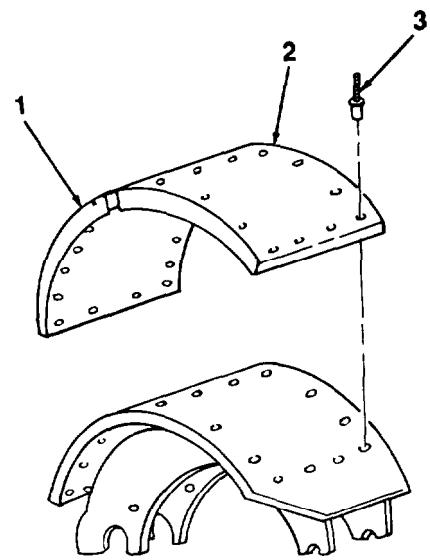
General Safety Instructions:

- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.
- Compressed air used for drying purposes must not exceed 30 psi (207 kPa).

a. REMOVAL OF BRAKE SHOE LININGS

(1) Drill out 24 rivets (3) and remove brake lining cam (2) and brake lining anchor (1) from brake shoe. Discard rivets.

(2) Repeat step 1 to remove brake shoe linings from other brake shoe.



5-3. BRAKE SHOE REPAIR (Con't).

b. CLEANING AND INSPECTION

WARNING

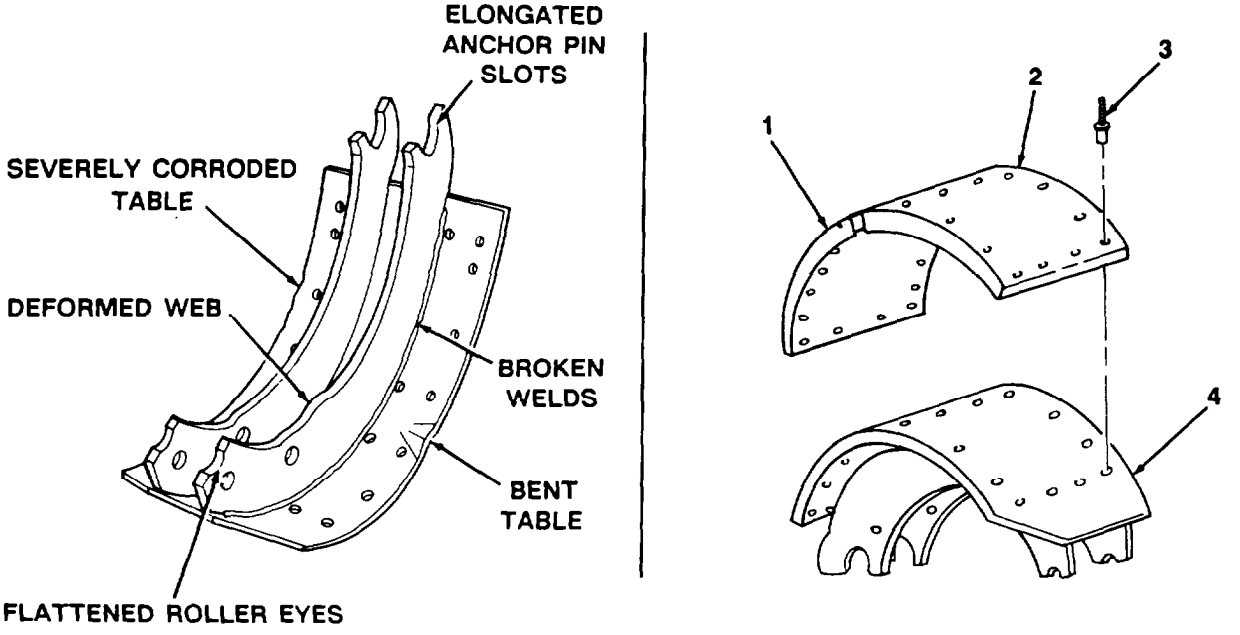
- **Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.**
- **Compressed air used for drying purposes must not exceed 30 psi (207 kPa). Wear protective clothing (goggles, face shield, and gloves) and use caution to avoid injury to personnel.**

(1) Clean brake shoe with dry cleaning solvent and dry with compressed air.

(2) Inspect brake shoe for damage. Look for a bent or severely corroded table, deformed web, or broken welds. Look for flattened roller eyes or elongated anchor pin slots. If damaged, replace entire brake shoe and lining assembly.

(3) File off any burrs or high spots in brake shoe table (4).

(4) Check for elongated rivet holes in brake shoe table (4). Pass a new rivet (3) through holes. Rivet should fit freely without excess play. If holes are elongated, replace brake shoe and lining assembly.



5-3. BRAKE SHOE REPAIR (Con't).

c. INSTALLATION OF BRAKE SHOE LININGS

NOTE

- **Keep hands clean when handling brake linings.**
- **DO NOT confuse brake lining cam (2) with brake lining anchor (1). Brake lining anchor has smaller cross-section and is tapered.**

(1) Clamp brake lining anchor (1) and brake lining cam (2) to brake shoe table (4) with rivet holes alined. Locate C-clamps as close as possible to rivet holes.

(2) Starting at center and working toward ends, drive new rivets (3) squarely into holes.

(3) Use a feeler gage to check brake lining cam (2) and brake lining anchor (1) to brake shoe table (4) clearance. No more than a 0.006 in. (0.15 mm) feeler gage can fit between lining and brake shoe table (4) along edges.

FOLLOW-ON TASKS:

Install brake shoes (see paragraph 4-35).

Section III. FRAME AND TOWING ASSEMBLY MAINTENANCE

Paragraph Number	Title	Page Number
5-4	Upper Coupler Assembly Replacement	5-10
5-5	Grabhandle and Convoy Warning Light Cable Assembly Repair	5-14

5-4. UPPER COUPLER ASSEMBLY REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Condition
2-11	Wheels chocked.
--	Tank empty

Materials/Parts:

- Fourteen locknuts
- Dry cleaning solvent (Item 10, Appendix E)
- Grease (Item 12, Appendix E)
- Mylar tape (Item 24, Appendix E)

Tools:

- Tool kit, general mechanic's
- Floor jack
- Torque wrench

General Safety Instructions:

- DO NOT perform task unless tank is empty and wheels are chocked.
- Use caution, provide adequate support, and use assistance during removal and installation of upper coupler assembly.
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

Personnel Required: Three

5-4. UPPER COUPLER ASSEMBLY REPLACEMENT (Con't).

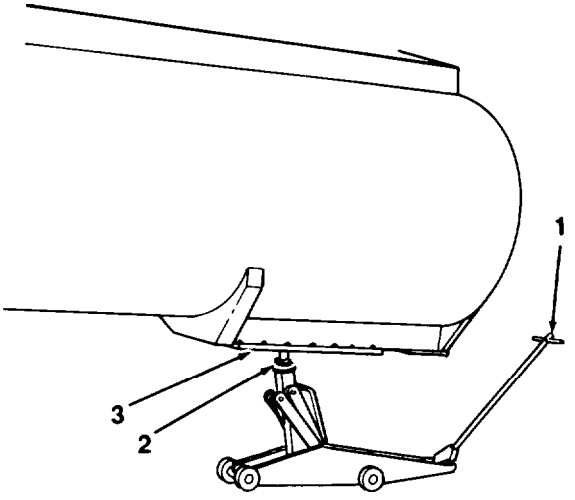
a. REMOVAL

WARNING

DO NOT perform task unless tank is empty and wheels are chocked. If tank is full, landing gear could collapse when front of semitrailer is lowered. Damage to semitrailer or serious injury or death to personnel will result.

(1) Position a floor jack (1) directly under kingpin (2) at upper coupler assembly (3). Raise floor jack to full height.

(2) Operate landing gear and lower front of semitrailer until kingpin (2) contacts floor jack (1).



WARNING

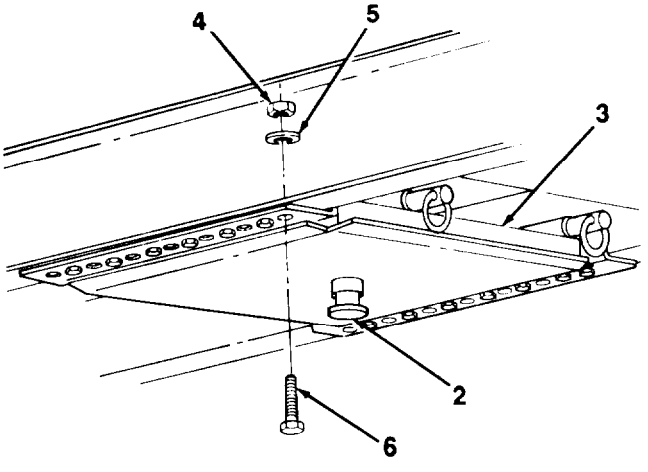
Upper coupler assembly (3) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious injury to personnel.

NOTE

Centermost bolts (6) on each side of upper coupler assembly (3) should be removed last.

(3) Remove 14 locknuts (4), bolts (6), and washers (5). Discard locknuts.

(4) Carefully lower upper coupler assembly (3) from under semitrailer. Remove from floor jack.



b. CLEANING

(1) Remove all traces of old mylar tape from mounting surfaces of upper coupler assembly to frame.

5-4. UPPER COUPLER ASSEMBLY REPLACEMENT (Con't).

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(2) Use dry cleaning solvent to clean mounting surfaces of upper coupler assembly to frame. Dry thoroughly.

c. INSTALLATION

CAUTION

To protect against corrosion and distortion of components, mylar tape must be applied to mounting surfaces of upper coupler assembly (3) to frame.

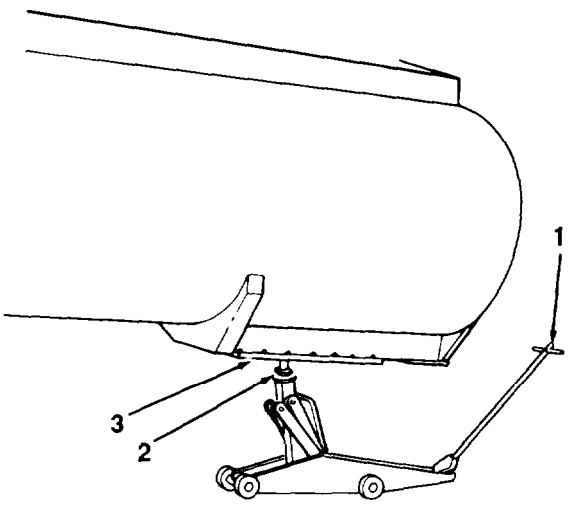
(1) Apply suitable width of mylar tape to mounting surfaces of upper coupler assembly (3) to frame. Pierce holes in mylar tape at all mounting bolt holes in frame to prevent water accumulation.

WARNING

Upper coupler assembly (3) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during installation. Failure to follow this warning may result in serious injury to personnel.

(2) Carefully lift upper coupler assembly (3) and place on floor jack (1). balanced on kingpin (2).

(3) Carefully raise floor jack (1) to full height and position upper coupler assembly (3) under semitrailer with tie-down facing front. Aline rearmost bolt holes of upper coupler assembly with rearmost bolt holes in frame.



5-4. UPPER COUPLER ASSEMBLY REPLACEMENT (Con't).

NOTE

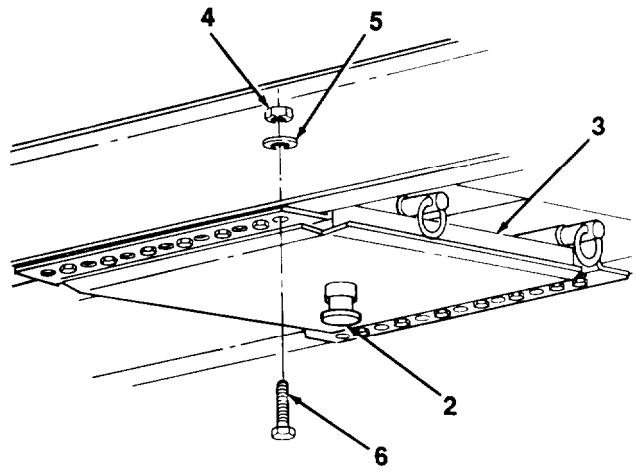
On each side of upper coupler assembly (3), bolts (6) are installed in first two holes, then in every other hole.

(4) Loosely install 14 bolts (6), washers (5), and new locknuts (4).

(5) Ensure that floor jack (1) is raised so that upper coupler assembly (3) is flush against semitrailer. Torque 14 locknuts (4) to 120 lb.-ft. (163 N•m).

(6) Trim excess mylar tape.

(7) Apply a thick coat of grease to upper coupler assembly (3) (see Chapter 3, Section I).



5-5. GRABHANDLE AND CONVOY WARNING LIGHT CABLE ASSEMBLY REPAIR.

THIS TASK COVERS

a. Grabhandle Cable Assembly Repair

b. Convoy Warning Light Cable Assembly Repair

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.

References: TM 9-237

Tools:

- Tool kit, general mechanic's
- Tool kit, welder's
- wire cutter

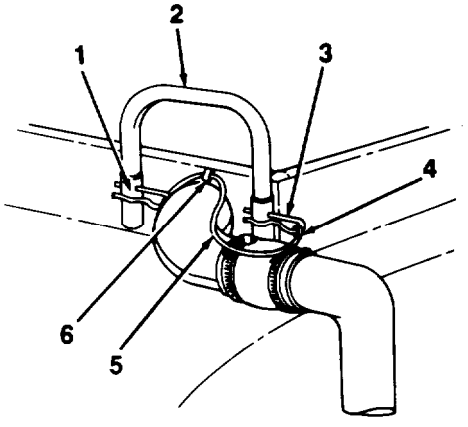
a. GRABHANDLE CABLE ASSEMBLY REPAIR

(1) Remove two lockpins (3) from grabhandle (2) and mounting brackets (1).

(2) Cut cable (5) and remove. Retain two lockpins (3) if not damaged.

(3) Cut a length of new cable (5) 19 in. (48.3 cm) long.

(4) Make two loops at ends of cable (5) and install two sleeves (4).



NOTE

Length of cable (5) and lockpin (3) assembly should be 31 in. (78.7 cm).

(5) Install two lockpins (3) through loops in cable (5). Pull loops tight. Use vise grips to crimp sleeves (4).

(6) Tack weld clip (6) to overturn rail to securely retain cable (5). Cable should not slip through clip.

(7) Install two lockpins (3) through grabhandle (2) and mounting bracket (1).

5-5. GRABHANDLE AND CONVOY WARNING LIGHT CABLE ASSEMBLY REPAIR (Con't).

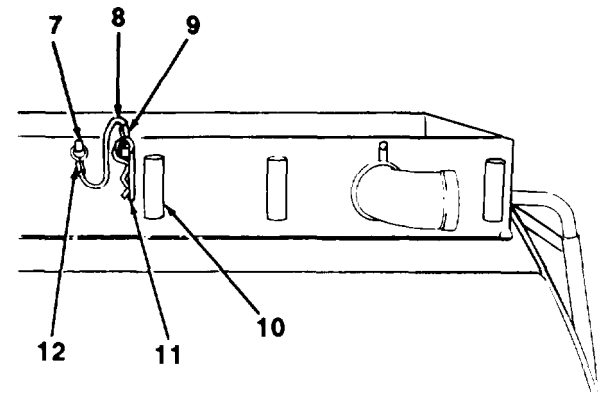
b. CONVOY WARNING LIGHT CABLE ASSEMBLY REPAIR

(1) If installed, remove convoy warning light from mounting bracket (10) (see paragraph 2-23).

(2) Cut cable (6) at sleeves (9 and 12) and remove. Retain lockpin (11) if not damaged.

(3) Cut a length of cable (6) 10.75 in. (27.3 cm) long.

(4) Form a 1/2 in. (13.0 mm) loop in one end of cable (6) and install sleeve (12), Use vise grips to crimp sleeve.



NOTE

Length of cable (8) and lockpin (11) assembly should be 13 in. (33.0 cm).

(5) Form a loop at other end of cable (6) and install sleeve (9). Install lockpin (11) through loop formed in cable. Pull loop tight. Use vise grips to crimp sleeve.

NOTE

Clip (7) should be positioned at overturn rail close enough to ensure that lockpin (11) will reach mounting bracket (10).

(6) Tack weld clip (7) to overturn rail to securely retain cable (6). Cable should not slip through clip.

Section IV. BODY MAINTENANCE

Paragraph Number	Title	Page Number
5-6	Cabinet Replacement	5-16

5-6. CABINET REPLACEMENT.

THIS TASK COVERS

a. Removal
b. Cleaning
c. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.
- -	Reducers and Basic Issue items removed from cabinet.
4-72	Precheck system components removed from cabinet.
4-45	Spare tire removed from spare tire carrier.

Tools:

- Tool kit, general mechanic's
- Tool kit, welder's
- Floor jack
- Tubing cutter

Personnel Required: Two

References:

- TM 9-237

Materials/Parts:

- Two straight adapters
- Two grommets
- Five clips
- Ten locknuts
- Marking chalk (Item 4, Appendix E)
- Dry cleaning solvent (Item 10, Appendix E)
- Grease (Item 12, Appendix E)
- Mylar tape (Item 24, Appendix E)

General Safety Instructions:

- Cabinet is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal and installation.
- Dry cleaning solvent is flammable and must not be used near open flame. Use only in a well-ventilated area.

5-6. CABINET REPLACEMENT (Con't).

a. REMOVAL

(1) Remove emergency valve operator from inside cabinet (7) (see paragraph 4-74).

(2) Approximately 1 ft. (30.5 cm) back from rear wall of cabinet (7), cut two tubings (1).

(3) If required, to allow removal of tubing pieces (3 and 11), file burred ends of two cables (2) inside cabinet (7).

NOTE

Mark tubing pieces (3 and 11) to ensure proper installation.

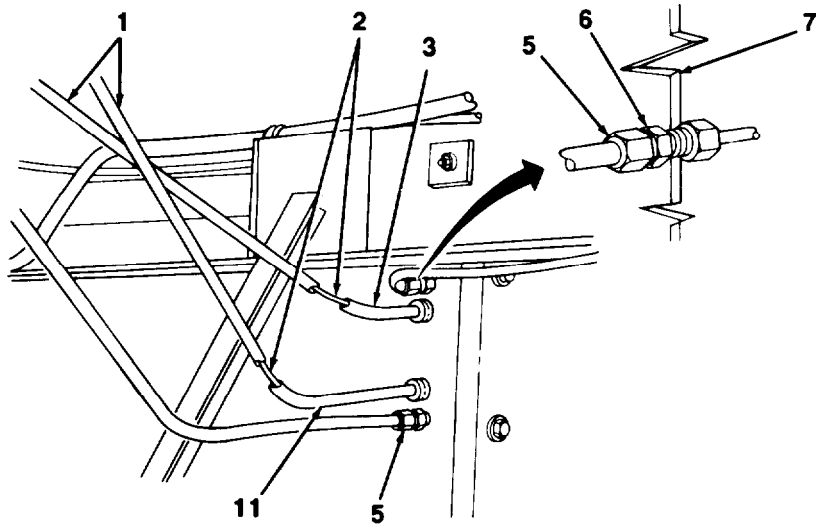
(4) Remove tubing pieces (3 and 11) from cabinet (7).

(5) Unscrew two nuts (5) from straight adapters (6).

WARNING

Cabinet (7) Is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during removal. Failure to follow this warning may result in serious Injury to personnel.

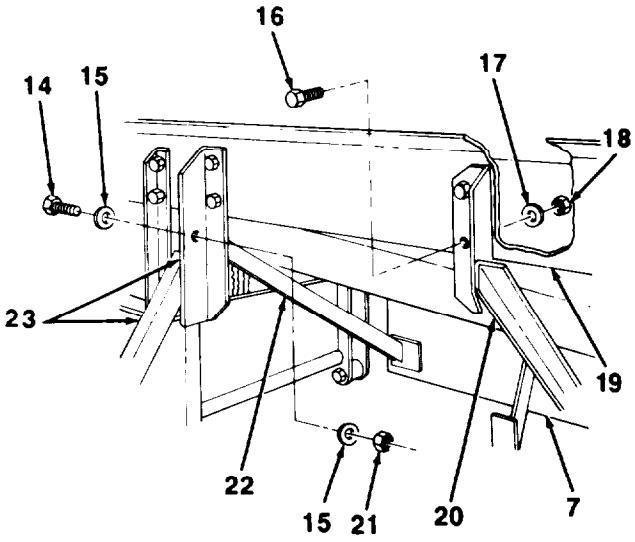
(6) Place a suitable floor jack under cabinet (7).



5-6. CABINET REPLACEMENT (Con't).

(7) Remove two locknuts (18), washers (17), and bolts (16) and disconnect front brace (20) from curbside framerail (19). Discard locknuts.

(6) Remove locknut (21), two washers (15), and bolt (14) and disconnect rear brace (22) from spare tire carrier (23). Discard locknut.

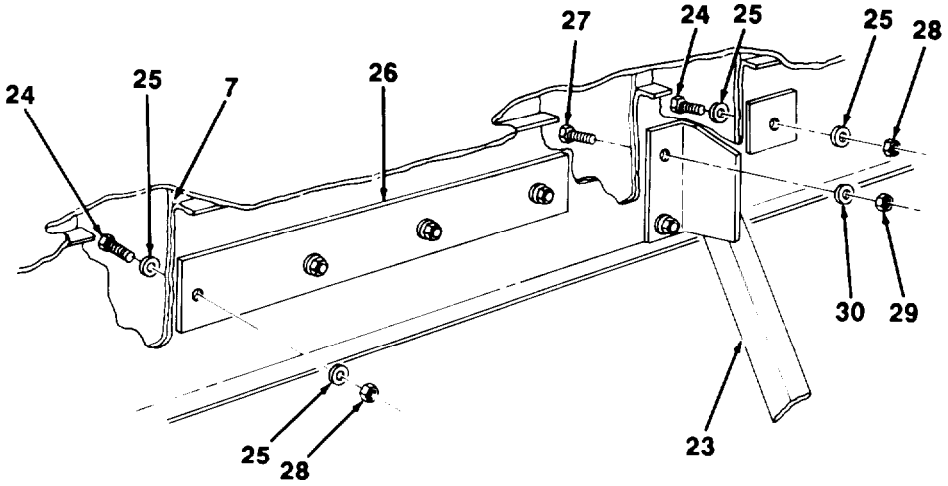


(9) Inside cabinet (7), remove five locknuts (26), ten washers (25), and five bolts (24). Discard locknuts.

(10) Remove two locknuts (29), washers (30), and bolts (27) and disconnect spare tire carrier (23) brace from cabinet (7). Discard locknuts.

(11) Remove brace (26). Remove cabinet (7).

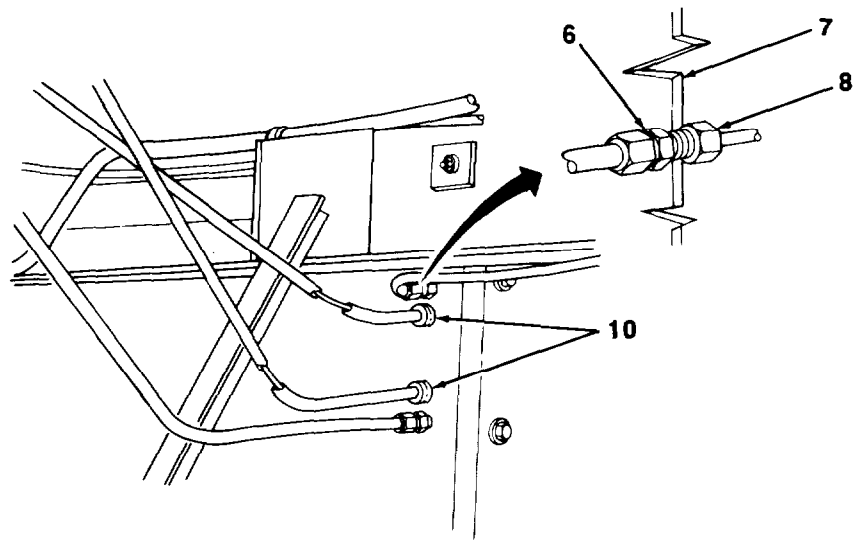
(12) Remove grounding stud and grounding reels from cabinet (7) and set aside (see paragraphs 4-64 and 4-65).



5-6. CABINET REPLACEMENT (Con't).

(13) Remove two nuts (6) and straight adapters (6) from rear wall of cabinet (7). Remove grommets (10) and discard.

(14) Use location of clips for precheck tubing in removed cabinet (7) as a guide to mark location of clips to be welded to replacement cabinet (see paragraph 4-72).



b. CLEANING

(1) Remove all traces of old mylar tape from mounting surfaces of cabinet and braces to frame.

WARNING

Dry cleaning solvent P-D-680 is toxic and flammable. Always wear protective goggles, face shield, and gloves, and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes and DO NOT breathe vapors. DO NOT use near open flame or excessive heat. The solvent's flash point is 100°F-138°F (38°C-59°C). If you become dizzy while using cleaning solvent, immediately get fresh air and medical help. If solvent contacts eyes, immediately wash your eyes with water and get medical aid.

(2) Use dry cleaning solvent to clean mounting surfaces of cabinet and braces to frame. Dry thoroughly.

c. INSTALLATION

CAUTION

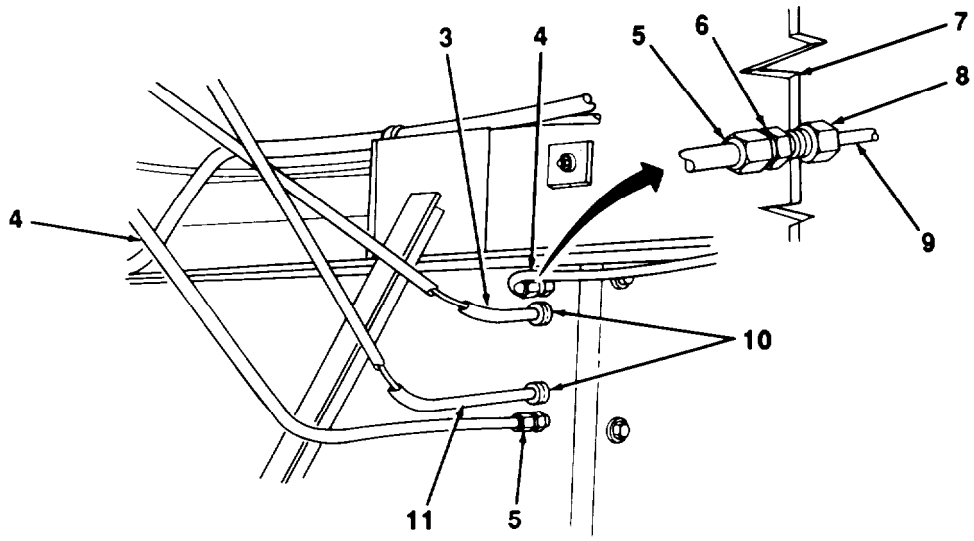
To protect against corrosion and distortion of components, mylar tape must be applied to mounting surfaces of cabinet (7) and brace (20) to frame.

(1) Apply suitable width of mylar tape to mounting surfaces of cabinet (7) and brace (20) to frame. Pierce holes in mylar tape at mounting bolt holes to prevent water accumulation.

5-6. CABINET REPLACEMENT (Con't).

(2) Install two straight adapters (6) to rear wall of cabinet (7) and tighten nuts (8). Install two new grommets (10).

(3) Install grounding stud and grounding reels (see paragraphs 4-64 and 4-65).



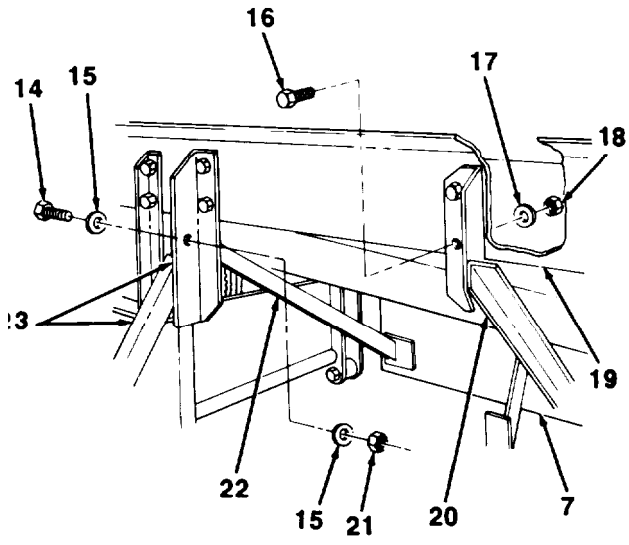
WARNING

Cabinet (7) is heavy and awkward to handle. Use caution, provide adequate support, and use assistance during installation. Failure to follow this warning may result in serious injury to personnel.

CAUTION

Use caution not to damage straight adapters (6) on rear wall of cabinet (7) when positioning cabinet against frame.

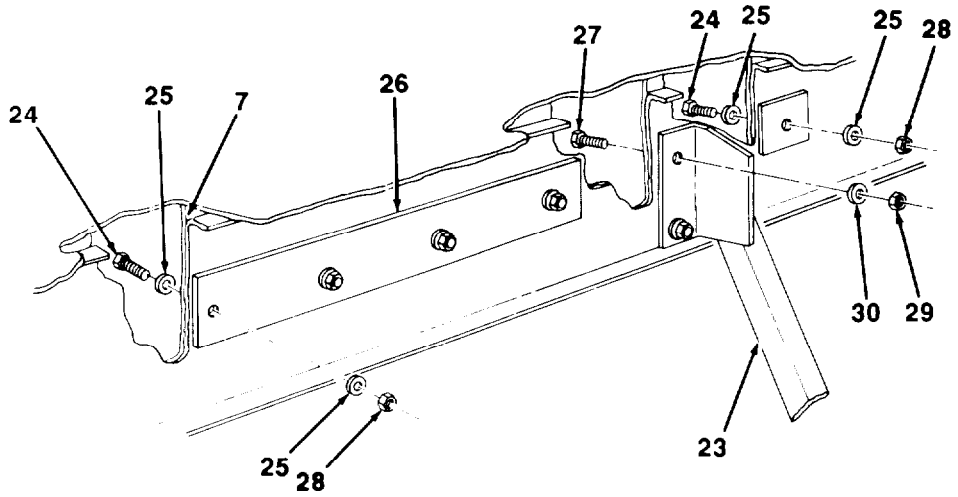
(4) Raise cabinet (7) without braces (20 and 22) on floor jack and position against frame.



5-6. CABINET REPLACEMENT (Con't).

(5) Loosely install brace (26) and cabinet (7) with five bolts (24), ten washers (25), and five new locknuts (28).

(6) Loosely connect spare tire carrier (23) brace to cabinet (7) with two bolts (27), washers (30), and new locknuts (29). Tighten locknuts (28 and 29).



(7) Loosely connect rear brace (22) to spare tire carrier (23) with bolt (14), two washers (15), and new locknut (21). Ensure brace is centered flush against pad at bottom rear corner of cabinet (7).

(8) Loosely connect front brace (20) to curbside framerail (19) with two bolts (16), washers (17), and new locknuts (18). Ensure brace is centered flush against pad at bottom front corner of cabinet (7).

NOTE

Refer to TM 9-237, Operator's Manual for Welding Theory and Application, for proper welding procedures.

(9) Weld front brace (20) and rear brace (22) to cabinet (7),

(10) Weld five clips for precheck tubing to rear wall and shelf of cabinet (7), as marked.

(11) Trim excess mylar tape.

(12) Fully tighten two locknuts (18) and locknut (21).

(13) Thread two cables (9) through straight adapters (6) into cabinet (7). Connect two tubings (4) and tighten two nuts (5).

(14) Apply grease to two grommets (10). Install two tubing pieces (3 and 11) through grommets, as marked.

5-6. CABINET REPLACEMENT (Con't).

CAUTION

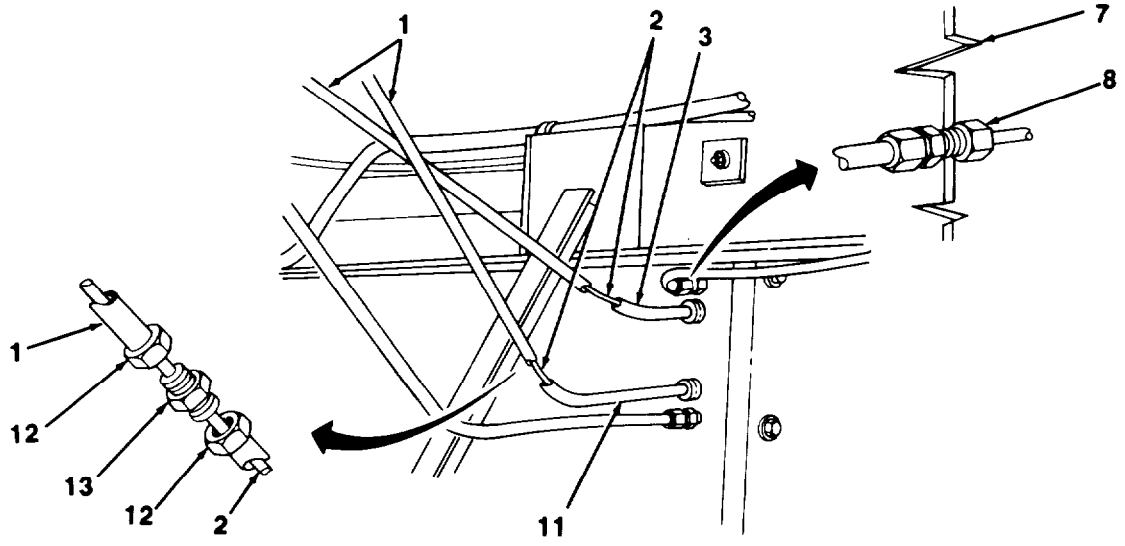
To ensure that cables (2) do not become frayed or otherwise damaged, any burrs on inside of tubing (1, 3, and 11) must be removed before connecting tubing.

(15) Thread two new straight adapters (13) through two cables (2). Thread cables through two tubing pieces (3 and 11) into cabinet (7).

(16) Connect two tubing (1) to two tubing pieces (3 and 11) with straight adapters (13). Leave nuts (12) loose until after emergency valve operator is installed inside cabinet (7).

(17) Install emergency valve operator (see paragraph 4-74).

(18) Tighten nuts (12).



FOLLOW-ON TASKS:

- Install precheck system components inside cabinet (see paragraph 4-72).
- Install spare tire to spare tire carrier (see paragraph 4-45).
- Stow reducers and Basic Issue Items inside cabinet.

Section V. NONELECTRICAL GAGES MAINTENANCE

Paragraph Number	Title	Page Number
5-7	Gage Marker Rod Replacement	*5-23*

5-7. GAGE MARKER ROD REPLACEMENT.

THIS TASK COVERS

a. Removal

b. Installation

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Tank purged.
4-73	Gage marker disk and ground wire removed.

Tools:

- Tool kit, general mechanic's
- Tool kit, welder's

Personnel Required: Two

References:

- TM 9-237

General Safety Instructions:

- When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed.
- NEVER work alone inside a tank; a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations.
- DO NOT perform any welding procedure unless tank is purged.

5-7. GAGE MARKER ROD REPLACEMENT (Con't).

a. REMOVAL

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. If a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**

Remove gage marker rod (1) from attachment to manhole collar (2), if present.

b. INSTALLATION OF GAGE MARKER ROD

WARNING

- **When working inside tank, always provide adequate forced air ventilation at the manhole opening with air directed into compartment where work is being performed. Forced air ventilation allows for removal of any explosive quantities and contaminants resulting from the type of work being done and serves to prevent oxygen deficiency. Failure to follow this warning may result in death to personnel.**
- **NEVER work alone inside a tank: a second person must be stationed at the manhole opening. The person inside the tank must have a safety line and harness on in case of emergency for rescue operations. If a rescue operation is required, summon assistance IMMEDIATELY. DO NOT attempt a rescue until assistance has arrived.**
- **DO NOT perform any welding procedure unless tank is purged. Failure to follow this warning will result in serious injury or death to personnel.**

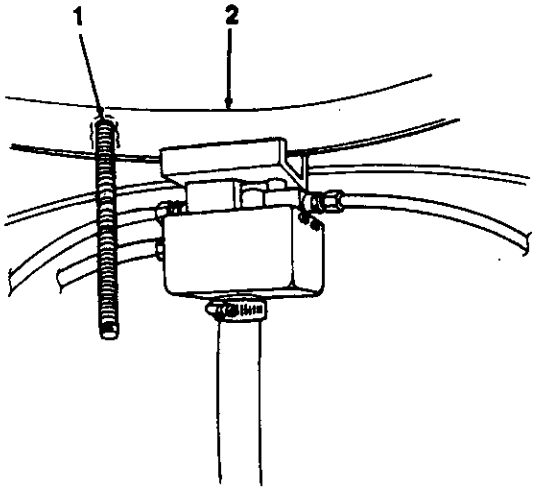
NOTE

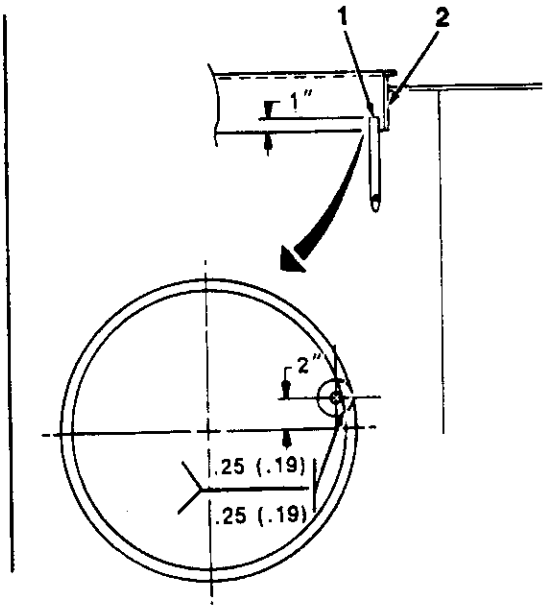
- **Illustrations show proper location of gage marker rod (1) when installed. To ensure proper calibration, gage marker rod must be installed according to specifications given.**
- **Refer to TM 9-237, Operator's Manual for Welding Theory and Application, for proper welding procedures.**

(1) Position gage marker rod (1) at manhole collar (2). Rod must be placed 2 in. (5.1 cm) to curbside of rear midpoint of manhole collar. Top of rod must be placed 1 in. (2.5 cm) from lower flange of collar.

(2) Weld gage marker rod (1) to manhole collar (2).

5-7. GAGE MARKER ROD REPLACEMENT (Con't).





FOLLOW-ON TASKS:

Install gage marker disk and ground wire (see paragraph 4-73).

Section VI. LINES, FITTINGS, AND VALVES MAINTENANCE

Paragraph Number	Title	Page Number
5-8	Vapor Integrity Test	5-26

5-8. VAPOR INTEGRITY TEST.

THIS TASK COVERS

a. Pressure Test Preparation
b. Pressure Test Procedure
c. Vacuum Test Preparation
d. Vacuum Test Procedure

INITIAL SETUP

Equipment Conditions:

Ref	Conditions
4-68	Semitrailer drained and purged.
2-17	Semitrailer bonded and grounded.

Tools:
- Tool kit, general mechanic's

Test Equipment:
- Pneumatic leakage test kit (NSN 2590-01-438-8806)

Materials/Parts:
- Quick disconnect (NSN 4730-00-024-9490) (Not included in kit; used for connecting air supply hose to shop air supply.)

General Safety Instructions:
- Use extreme caution when working or walking on trailer.
- Testing personnel must be registered with the Department of Transportation (DOT) in accordance with DOT 49CFRI80.409.

a. PRESSURE TEST PREPARATION

WARNING

- **Use extreme caution when walking or working on top of semitrailer. Walkway can become slippery due to moisture or fuel spillage. Failure to follow this warning may result in serious injury to personnel.**
- **Verify that tanker is properly grounded prior to performing test. Due to the dangers of static electricity, grounding the semitrailer to the vehicle while refueling is mandatory, regardless of the amount of fuel to be dispensed. Failure to follow this warning may cause spark to ignite, resulting in serious injury or death to personnel.**
- **Before performing maintenance on the semitrailer, the semitrailer must be grounded to an approved (earth) ground and it must be safe to proceed. Failure to follow this warning may cause a spark to ignite, resulting in serious injury or death to personnel.**

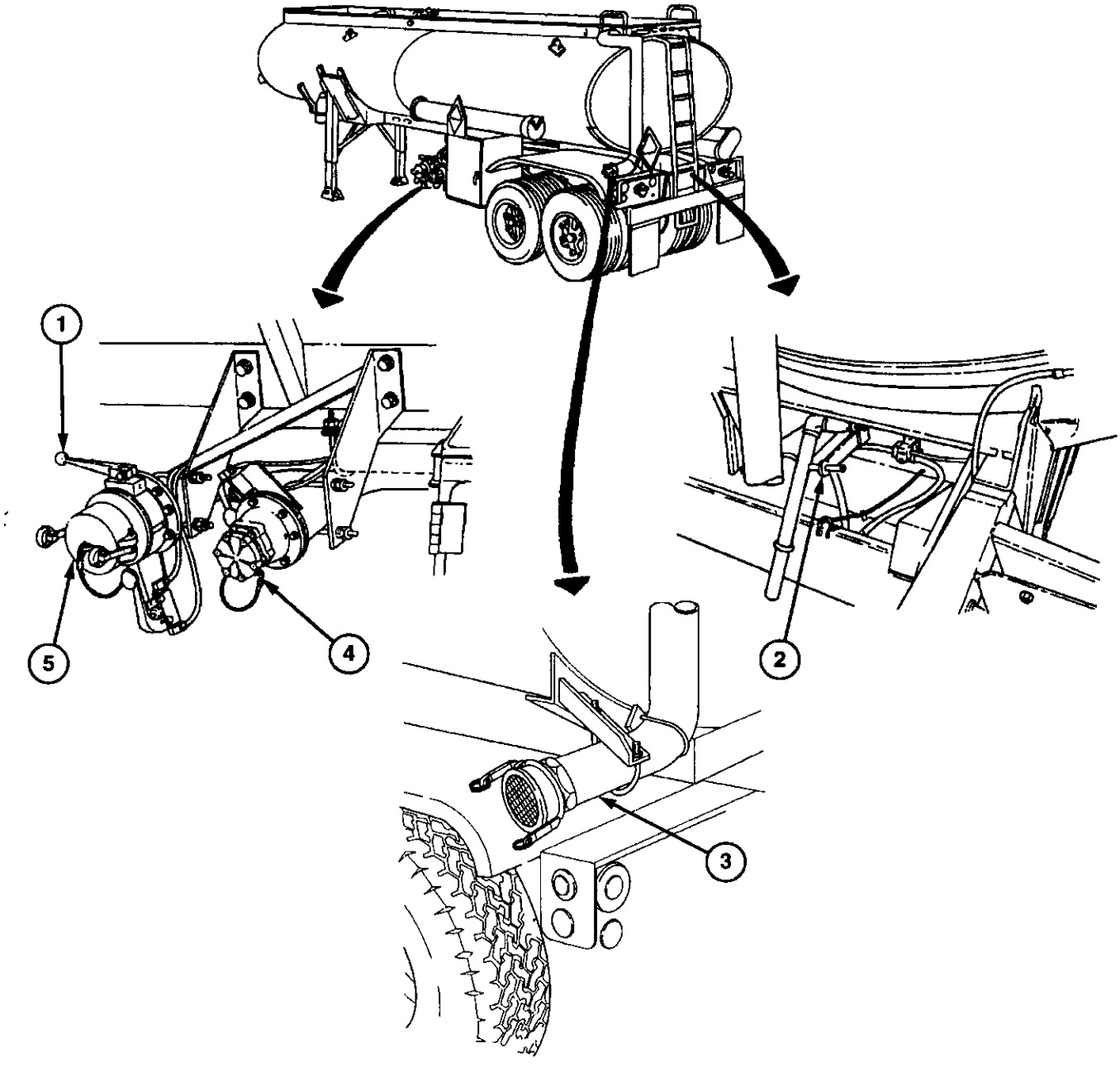
5-8. VAPOR INTEGRITY TEST (Con't).

NOTE

- Perform the pressure test in an area having minimum temperature changes. Temperature changes directly affect pressure readings.
- Visually inspect outside of tank and all associated piping. Look for stained areas that indicate obvious leakage. Repair obvious leaks prior to performing pressure test.

(1) Close butterfly valve (1) and rear sump drain (2).

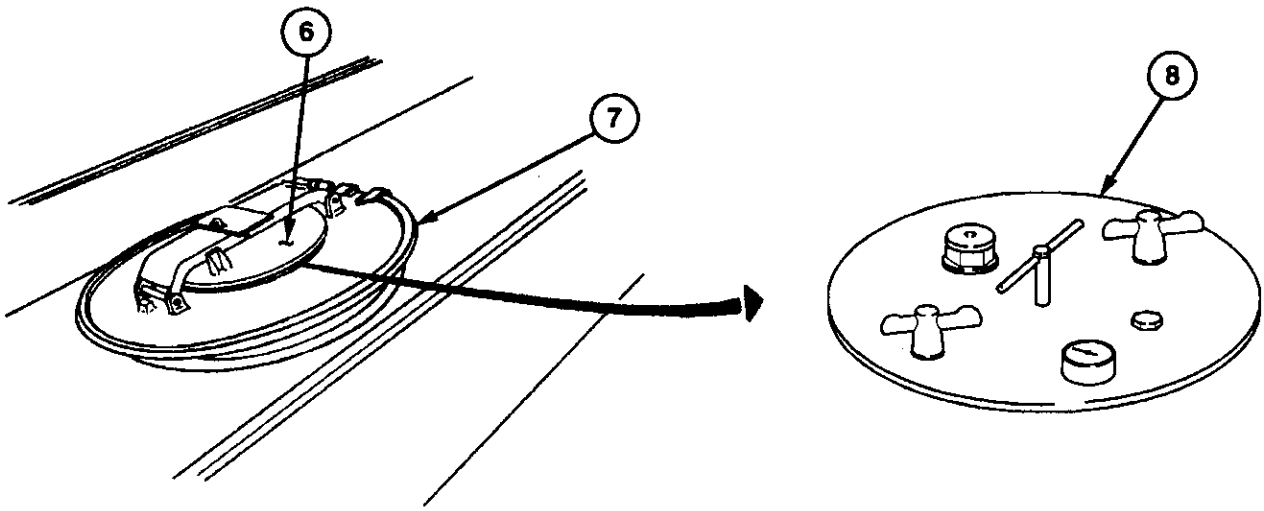
(2) Remove dust caps from three-inch rear inlet (4), four-inch front port (5), and vapor return line (3).



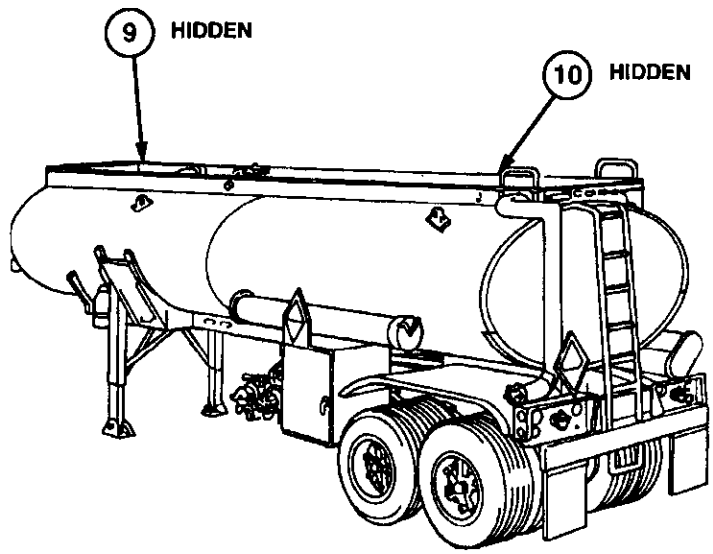
5-8. VAPOR INTEGRITY TEST (Con't).

(3) Open manhole cover (6) and install test plate (8). Make sure test plate (8) is fastened securely.

(4) Make sure clamp ring (7) for manhole cover (6) is fastened securely.

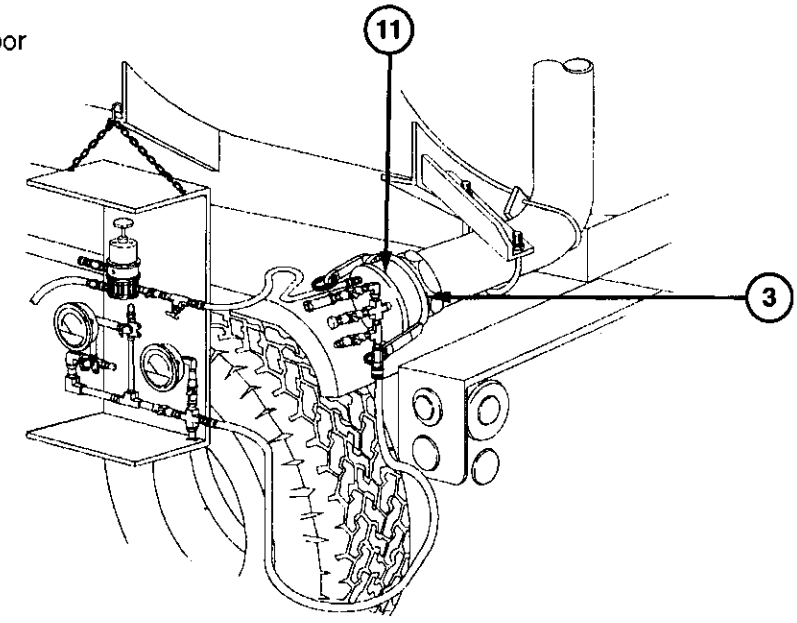


(5) Make sure both caps (9 and 10) for three-inch cleanouts are secured.



5-8. VAPOR INTEGRITY TEST (Con't).

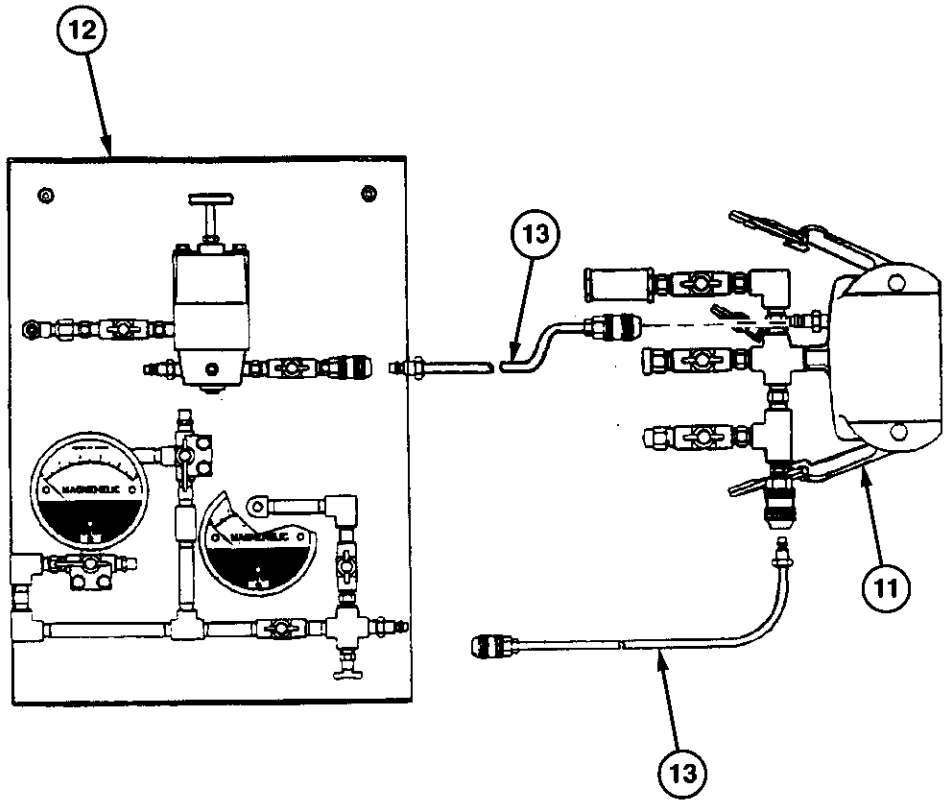
(6) Install coupling assembly (11) on vapor return line (3).



NOTE

Place regulator assembly in a convenient area.

(7) Attach regulator assembly (12) to two hose assemblies (13). Attach two hose assemblies (13) to coupling assembly (11).

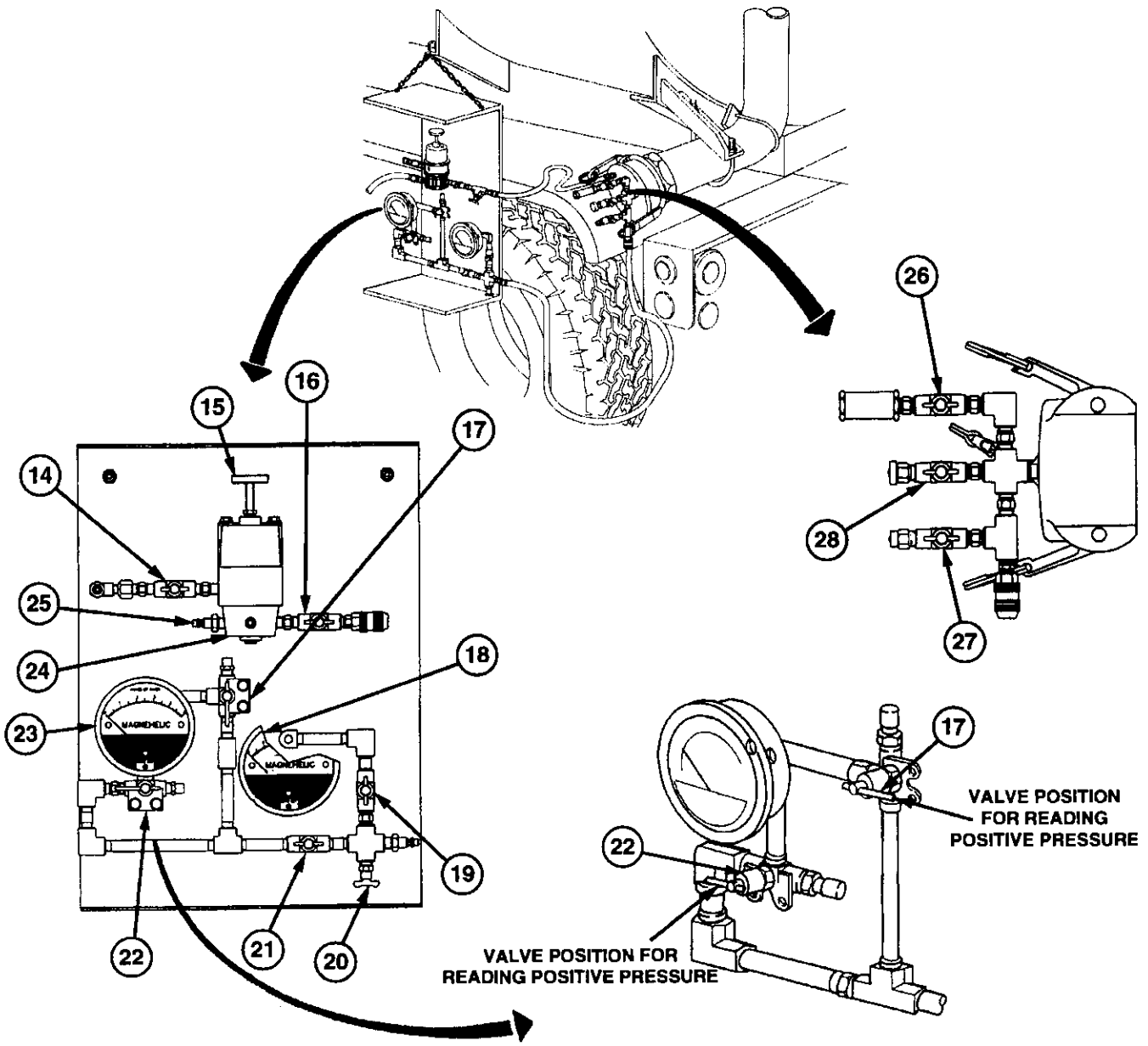


5-8. VAPOR INTEGRITY TEST (Con't).

(8) Set gages (18 and 23) at zero before starting test.

(9) Close shutoff valve (16), draincock valve (20), and four valves (14, 19, 26, and 28). Open two valves (21 and 27).

(10) Set two valves (17 and 22) for reading positive pressure.



5-8. VAPOR INTEGRITY TEST (Con't).

WARNING

Do not overpressurize tank. Failure to heed this warning may result in death or injury to personnel or serious damage to equipment.

NOTE

The pneumatic test pressure in the tank must be reached gradually.

(11) Make sure pressure regulator (24) is set to lowest setting (turn regulator knob (15) fully counterclockwise) to avoid overpressure in tank.

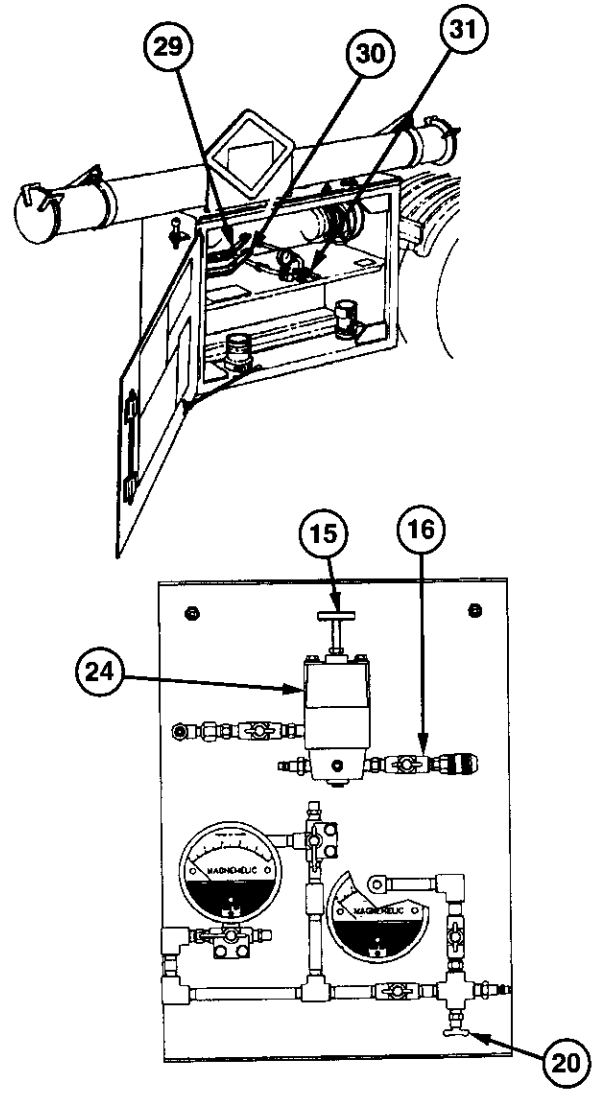
(12) Connect shop air pressure supply to pressure port (25) at pressure regulator (24).

b. PRESSURE TEST PROCEDURE

(1) Open emergency valve (29), vapor vent valve (30), and precheck valve (31) using valve levers located in roadside cabinet.

(2) Open shutoff valve (16). Slowly adjust pressure regulator (24) by turning regulator knob (15) clockwise to increase flow of air into vapor return line and tank until a pressure reading of 18.0 inches ± 0.5 inch water column (wc) is obtained. Close shutoff valve (16).

(3) Wait five minutes to verify that pressure reading remains stable at 18.0 inches ± 0.5 inch wc. Initial test pressure must be at 18.0 inches ± 0.5 inch wc.



WARNING

Do not overpressurize tank. Failure to heed this warning may result in death or injury to personnel or serious damage to equipment.

(4) If tank is overpressurized, close shutoff valve (16) and open draincock valve (20) to reduce overpressure. Close draincock valve (20) after tank pressure has dropped to 18.0 inches ± 0.5 inch wc.

(5) At the end of an additional five minutes, record the time and final pressure. If pressure does not drop and tank is leak free, go to step 6. If tank leaks more than 0.5 inch wc, repressurize tank per step 2 and then go to step 6.

5-8. VAPOR INTEGRITY TEST (Con't).

(6) Close vapor vent valve (30) using lower lever in roadside cabinet. At the end of an addtional five minutes, record the time and final pressure.

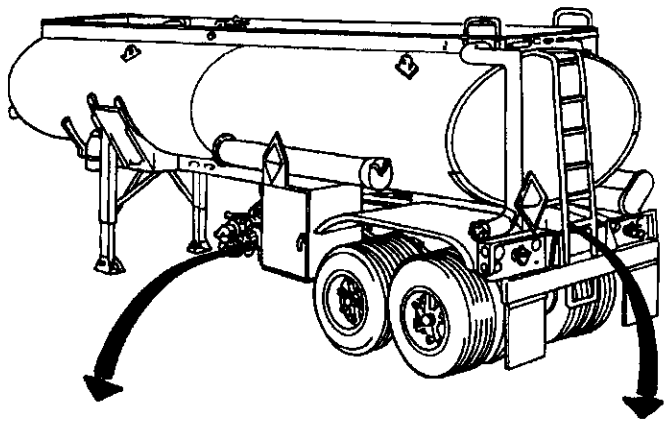
(7) If pressure in vapor vent line remains at 18.0 inches ± 0.5 inch wc, go to step 12. If pressure drops, go to step 8.

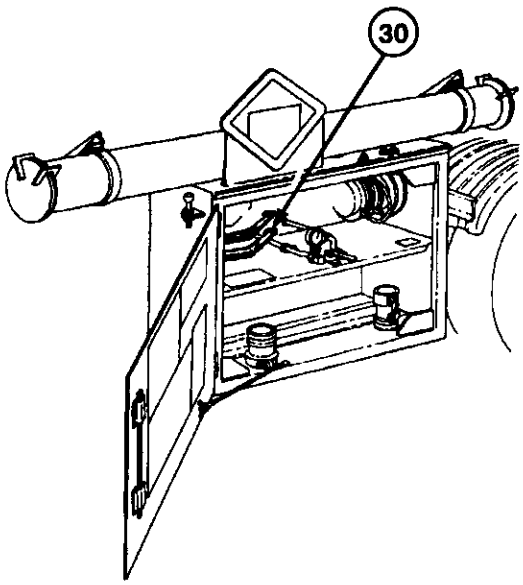
(8) Look for leaks in vapor return line system (check vapor vent hood, vapor vent hose, cleanout caps, gasket, and pipe joints).

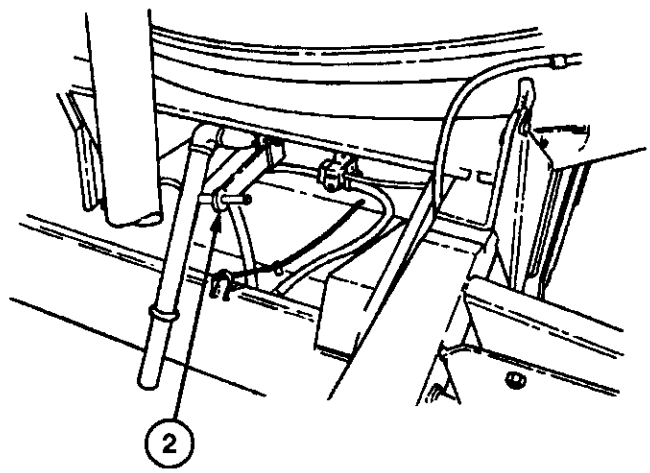
NOTE

Safety bolt must be removed from rear sump drain control lever prior to opening rear sump drain.

(9) Return tank and piping system to normal atmospheric pressure by opening rear sump drain (2) and vapor vent valve (30).





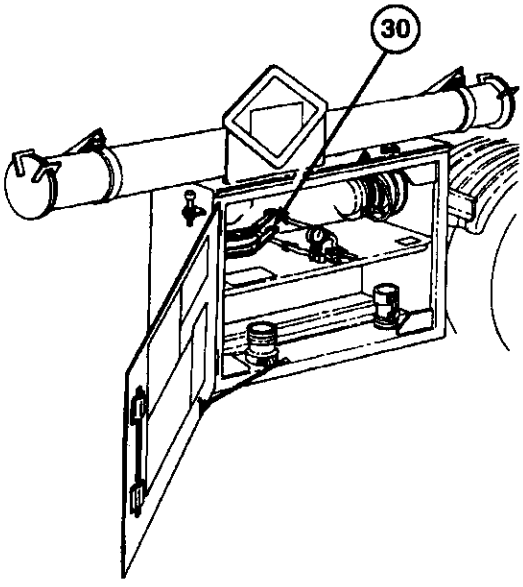


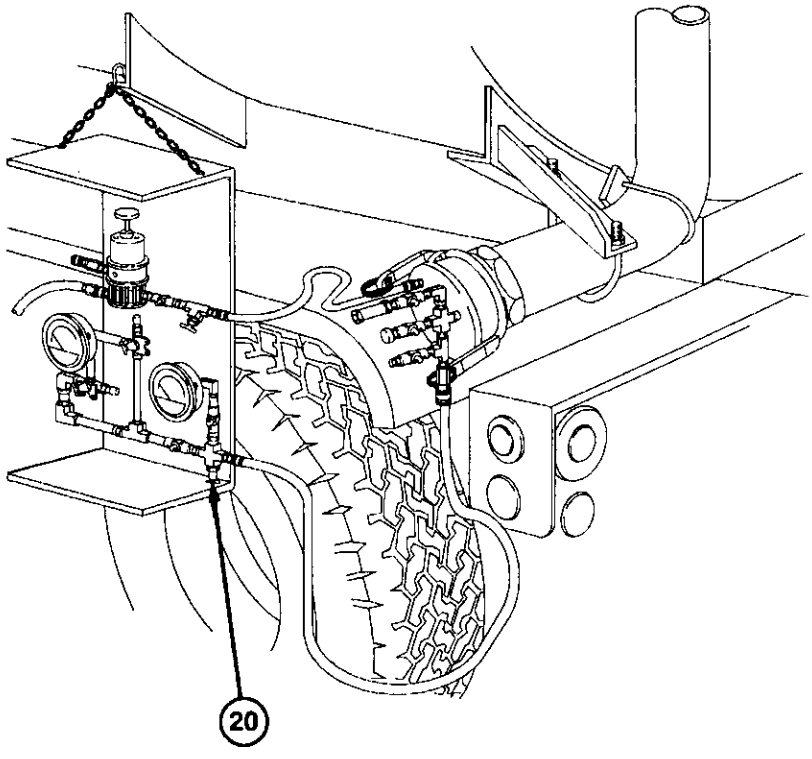
5-8. VAPOR INTEGRITY TEST (Con't).

(10) Repair any leaks found in vapor vent line (para 4-81).

(11) After repairing any leaks found in step 10, restart test at step 1.

(12) Close vapor vent valve (30), and return vapor vent line to atmospheric pressure by opening draincock valve (20).



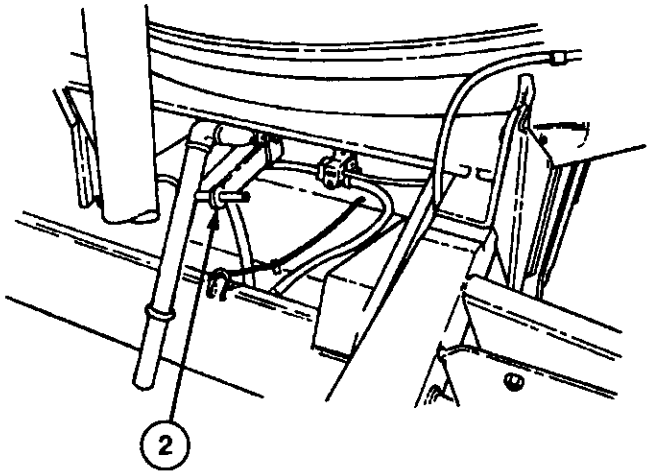


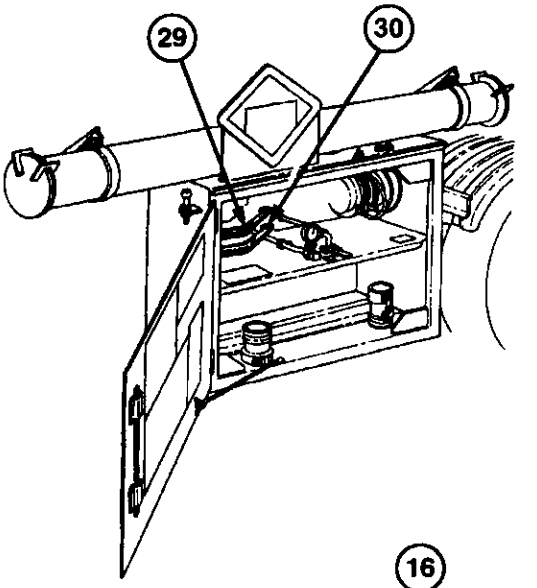
(13) Close draincock valve (20) and monitor pressure gage for five minutes, looking for an increase in pressure.

(14) If no increase in pressure is indicated on pressure gage, vapor vent valve (30) is functional. Go to step 17. If an increase in pressure is indicated, vapor vent valve (30) is faulty. Go to step 15.

5-8. VAPOR INTEGRITY TEST (Con't).

(15) Return tank and piping system to normal atmospheric pressure by opening rear sump drain (2) and vapor vent valve (30).





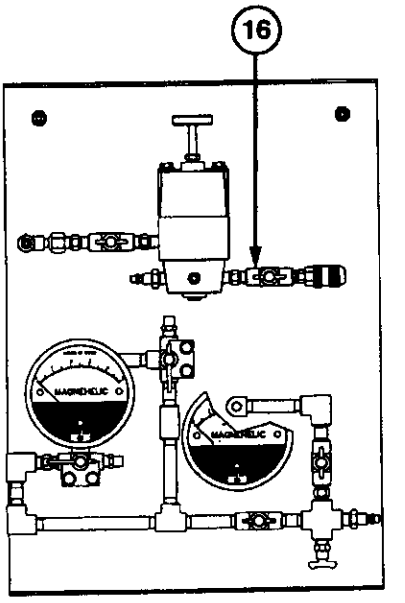
(16) Repair vapor vent valve (para 4-76), and restart test from step 1.

(17) With emergency valve (29) still open, open vapor vent valve (30) and repressurize tank, if necessary, bringing pressure up to 18.0 inches ± 0.5 inch wc (see step 2).

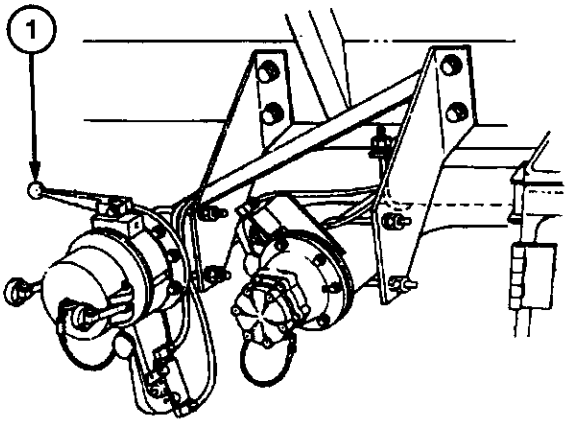
(18) If pressure does not drop, go to step 26. If pressure drops, go to step 19.

(19) Close emergency valve (29). Repressurize tank to 18.0 inches ± 0.5 inch wc per step 2, if necessary. If 18.0 inches ± 0.5 wc pressure is maintained once control shutoff valve is closed, go to step 20. If pressure drops when shutoff valve (16) is closed, go to step 23.

(20) Visually locate the leak in discharge piping system (check discharge valve, piping, sump drain, and precheck valve circuit) (Chapter 4, Section XIV).



5-8. VAPOR INTEGRITY TEST (Con't).



(21) Open rear sump drain (2) and butterfly valve (1), and return tank pressure to normal.

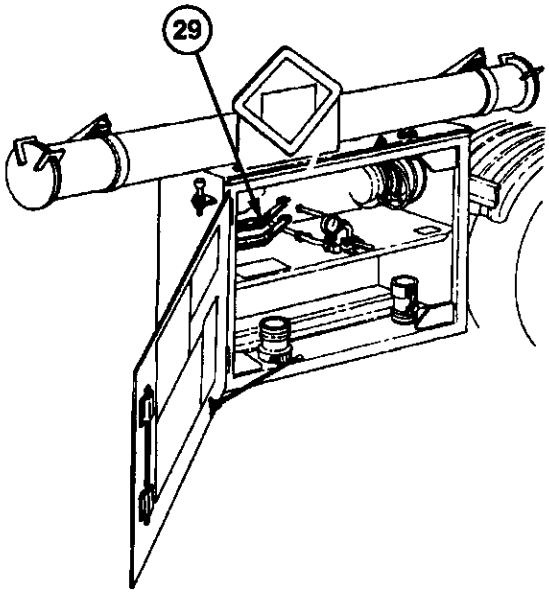
(22) Repair piping leak (para 4-80), and return to step 17.

(23) Visually locate tank barrel leak (check cleanout caps, manhole gasket, precheck valve circuit, joints, and seals).

(24) Return tank and piping system to atmospheric pressure by opening rear sump drain (2) and butterfly valve (1).

(25) Repair tank barrel leaks, and return to step 17.

(26) Close emergency valve (29) with top lever in roadside cabinet. Return discharge piping to atmospheric pressure by opening butterfly valve (1).



(27) If pressure does not drop in five minutes, go to step 30. If pressure drops, go to step 28.

(28) Return entire tank and piping to atmospheric pressure by opening rear sump drain (2) and butterfly valve (1).

NOTE

Although an emergency valve leak does not constitute a "K" stamp failure if the leak is internal, proper emergency valve function is still required for safe tanker operation.

(29) Repair emergency valve leak (para 4-74), and return to step 17.

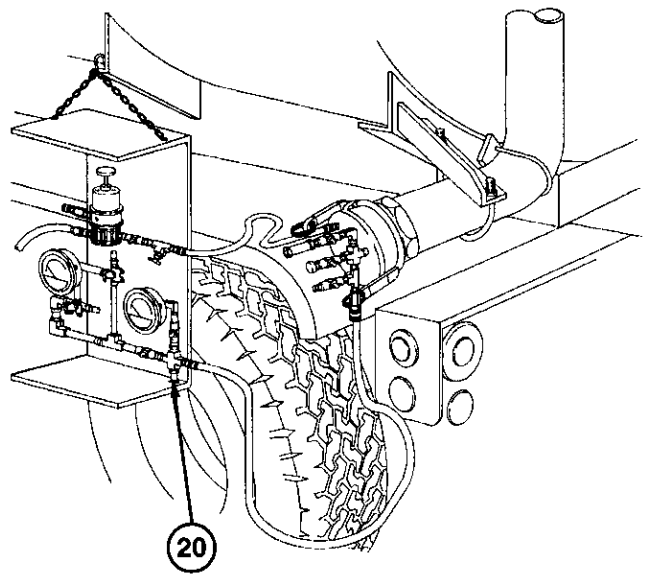
(30) If pressure does not drop, emergency valve is maintaining a pressure differential without leakage.

5-8. VAPOR INTEGRITY TEST (Con't).

WARNING

Return tank and discharge piping system to atmospheric pressure. Failure to do so may result in injury to personnel or damage to equipment.

(31) Open draincock valve (20) and return tank and discharge piping system to atmospheric pressure.

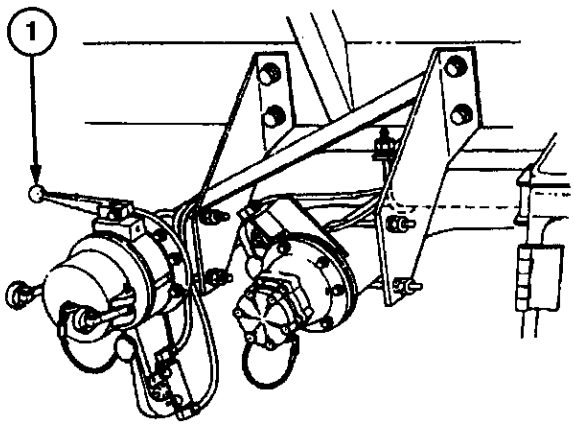


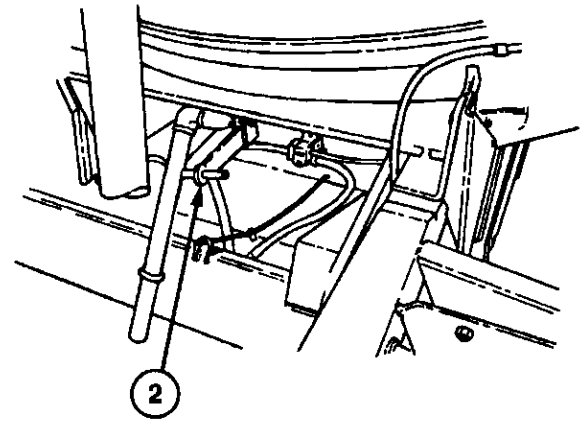
c. VACUUM TEST PREPARATION

NOTE

Visually inspect outside of tank and all associated piping. Look for stained areas that indicate obvious leakage. Repair obvious leak areas prior to leak testing.

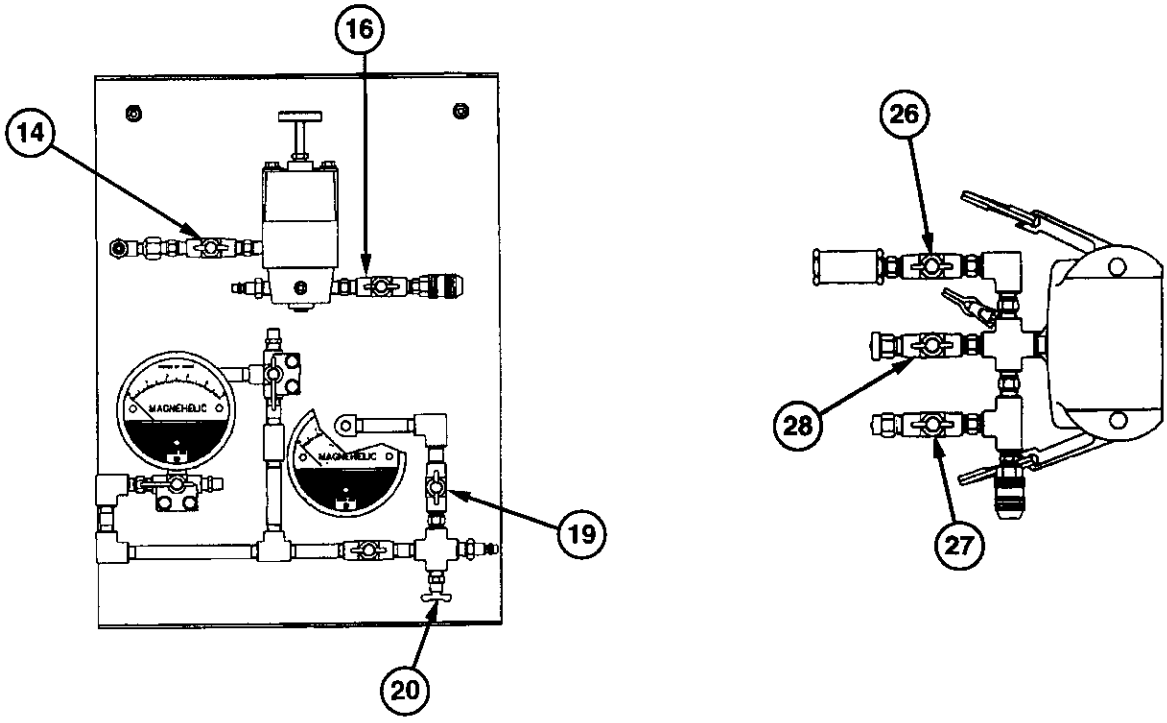
(1) Close butterfly valve (1) and rear sump drain (2).



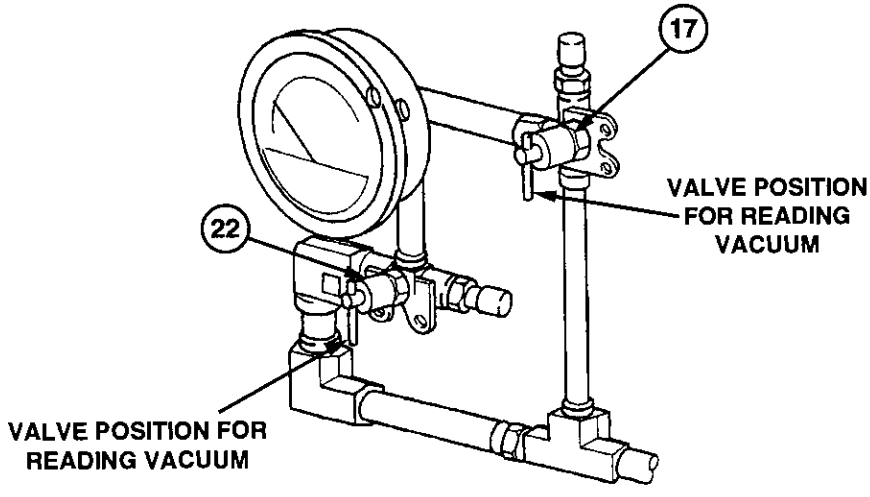


5-8. VAPOR INTEGRITY TEST (Con't).

(2) Make sure shutoff valve (16), valve (19), draincock valve (20), and two valves (28 and 27) are closed and two valves (14 and 26) are open.



(3) Set two valves (17 and 22) for reading vacuum.



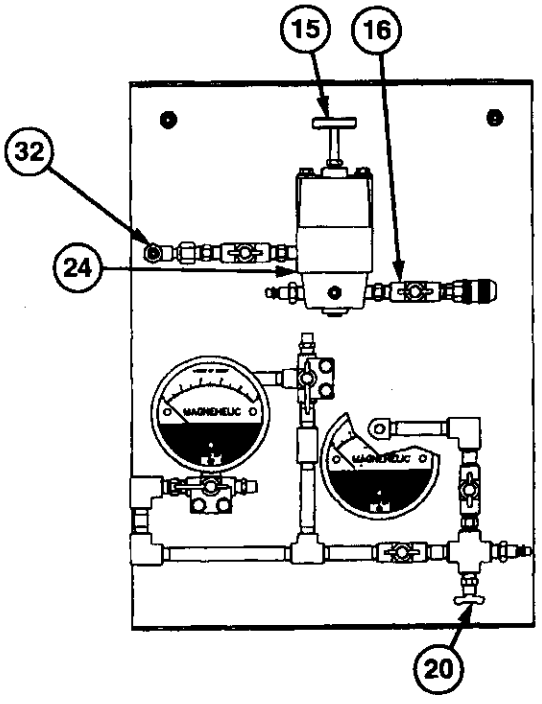
5-8. VAPOR INTEGRITY TEST (Con't).

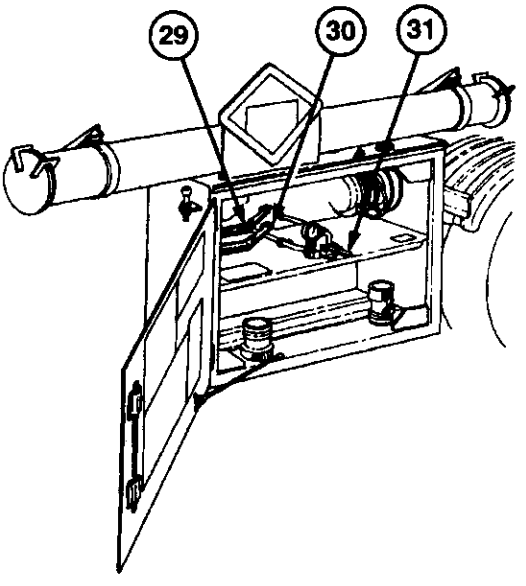
WARNING

To avoid overpressure in the tank, make sure regulator is set to its lowest setting. The pneumatic test vacuum in the tank must be reached gradually. Failure to follow this warning may result in injury to personnel or serious damage to equipment.

(4) Set pressure regulator (24) to its lowest setting by turning regulator knob (15) fully clockwise.

(5) Connect shop air pressure supply to vacuum port (32) of pressure regulator (24).





d. VACUUM TEST PROCEDURE

(1) Open emergency valve (29), vapor vent valve (30), and precheck valve (31) using valve levers located in roadside cabinet. Open shutoff valve (16).

(2) Slowly adjust pressure regulator (24) (by turning regulator knob (15) counterclockwise) to increase the flow of air and evacuate vapor return line and tank until a vacuum reading of 6.0 inches ± 0.5 inch wc is obtained. Close shutoff valve (16).

(3) Wait five minutes and record the time and final pressure; if necessary, repressurize the tank to 6.0 inches ± 0.5 inch wc, wait an additional five minutes, and record the time and final pressure. Initial test vacuum must be 6.0 inches ± 0.5 inch wc.

5-8. VAPOR INTEGRITY TEST (Con't).

WARNING

Do not overpressurize tank; serious injury to personnel or damage to equipment may result.

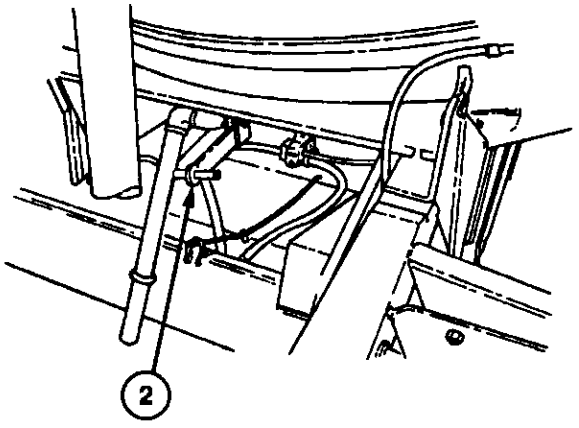
(4) If tank is overpressurized, close shutoff valve (16) and open draincock valve (20) to reduce tank pressure. Once tank pressure has dropped to 6.0 inches ± 0.5 inch wc, close draincock valve (20).

(5) Close vapor vent valve (30) using lower lever located in roadside cabinet.

(6) If vacuum in vapor vent line remains at 6.0 inches ± 0.5 inch wc, go to step 10. If pressure drops, go to step 7.

(7) Visually locate the leak in vapor return line (check vapor vent hood, vapor vent hose, and pipe joints).

(8) Return tank and piping system to atmospheric pressure by opening rear sump drain (2) and vapor vent valve (30).



(9) Repair leak in vapor return line (para 4-78), and verify repair by testing per step 2.

(10) Close vapor vent valve (30) and return vapor vent line to atmospheric pressure by opening draincock valve (20).

(11) Close draincock valve (20) and monitor pressure gage for vacuum increases.

(12) If vapor vent line vacuum shows no increase, go to step 15. If a decrease in vacuum is detected, go to step 13.

(13) Return tank and piping to atmospheric pressure by opening rear sump drain (2) and vapor vent valve (30).

(14) Repair vapor vent valve (30) (para 4-78), and verify repair by testing per step 2.

(15) Open vapor vent valve (30) and reevacuate tank, if necessary, bringing vacuum to 6.0 inches ± 0.5 inch wc, per step 2.

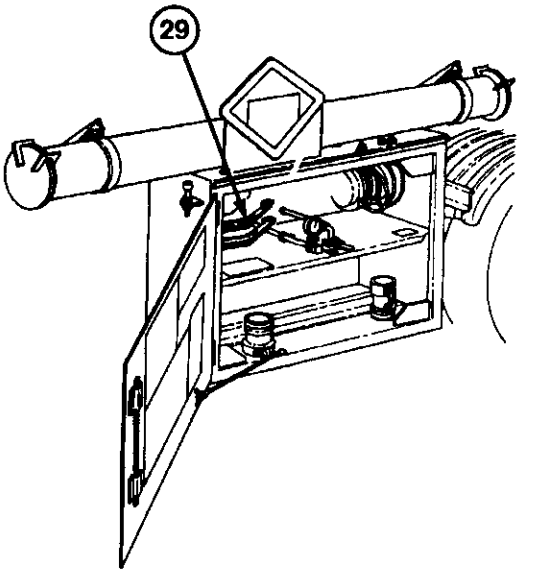
5-8. VAPOR INTEGRITY TEST (Con't).

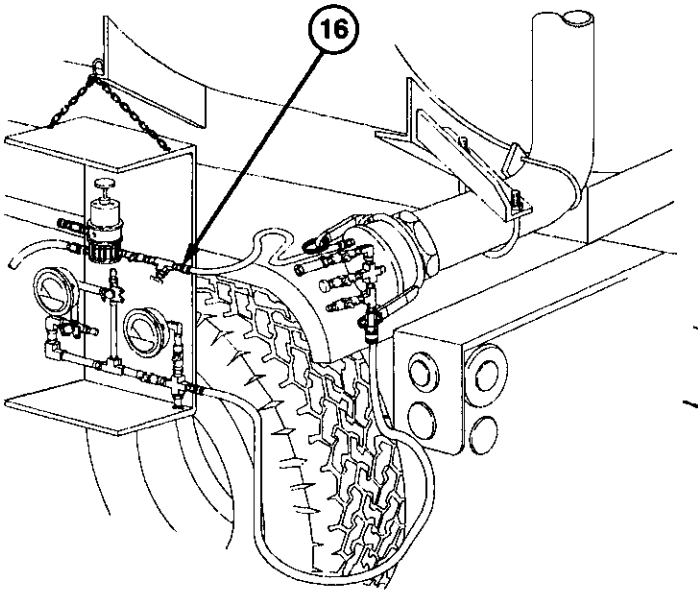
(16) If vacuum does not drop, go to step 25. If vacuum drops, go to step 17.

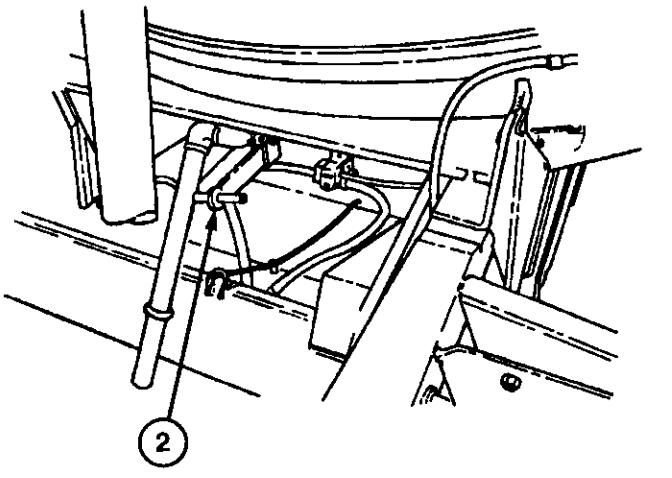
(17) Close emergency valve (29) using top lever in roadside cabinet.

(18) If necessary, reevacuate tank to 6.0 inches ± 0.5 inch wc, per step 2. If vacuum is maintained once shutoff valve (16) is closed, go to step 19. If vacuum drops when shutoff valve (16) is closed, go to step 22.

(19) Visually locate the leak in discharge piping system (check discharge valves, piping, sump drain, and precheck valve circuit).





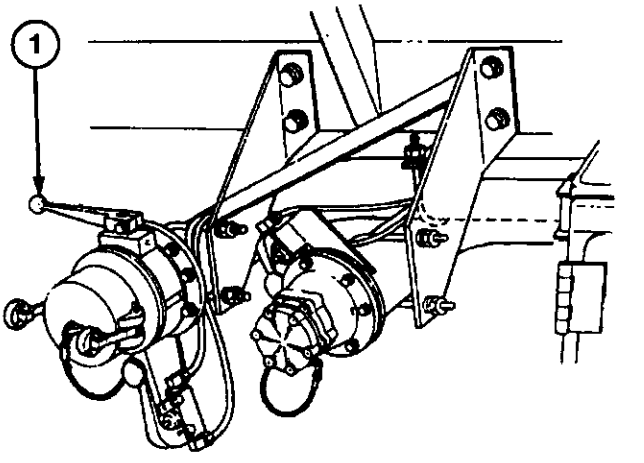


(20) Return tank and piping system to atmospheric pressure by opening rear sump drain (2) and butterfly valve (1).

(21) Repair the leak in discharge piping system (para 4-80), and verify repair by testing per step 18.

(22) Visually locate tank barrel leak by checking cleanout caps, manhole gasket, precheck valve circuit, joints, and seals.

(23) Return tank and piping system to atmospheric pressure by opening rear sump drain (2) and butterfly valve (1).



5-8. VAPOR INTEGRITY TEST (Con't).

(24) Repair tank barrel leaks, and verify repair by testing per step 18.

(25) Close emergency valve (29) using top lever in roadside cabinet.

(26) Return discharge piping to atmospheric pressure by opening butterfly valve (1).

(27) If vacuum does not drop, emergency valve is maintaining a differential pressure without leaking; go to step 31. If vacuum drops, an emergency valve leak is the cause; go to step 28.

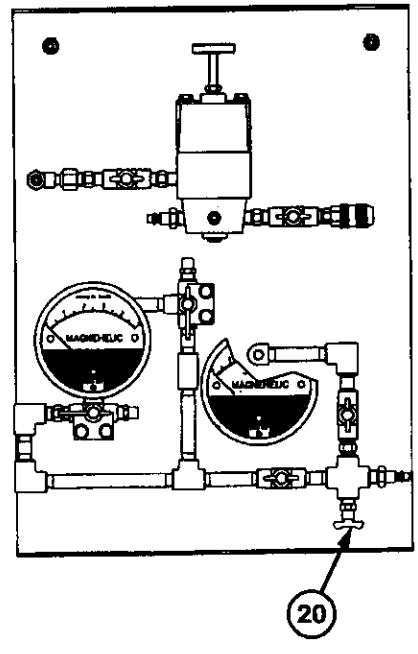
(28) Return tank and piping to atmospheric pressure by opening rear sump drain (2) and butterfly valve (1).

NOTE

Although an emergency valve leak does not constitute a "K" stamp failure if the leak is internal, proper emergency valve function is still required for safe operation.

(29) Repair emergency valve leak (para 4-74), and verify repair by testing per step 18.

(30) Return tank and discharge piping system to atmospheric pressure by opening draincock (20), butterfly valve (1), and sump drain (2) located at rear of vehicle.



(31) Return tanker to service by closing all valves and removing all test hardware from tanker.

NOTE

Refer to DOT 49CFR, paragraph 180.415, in regard to inspection markings required for this test; markings will include test date (month and year), followed by the letter "K."

APPENDIX A
REFERENCES

A-1. SCOPE.

This appendix lists indexes and general references, field manuals, technical bulletins, and technical manuals required for use with this manual.

A-2. INDEXES AND GENERAL REFERENCES.

a. The following indexes and general references should be frequently consulted for the latest changes, or revisions, to references given in this appendix and for new information relating to materiel covered in this manual.

b. Military Publication Indexes:

Consolidated Index of Army Publications and Blank Forms	DA Pam 25-30

c. General References:

Authorized Abbreviations and Brevity Codes	AR 310-50
Catalog of Audiovisual Productions, Army Productions, Volume I (PA)	DOD 5040.2-C-1
Dictionary of United States Army Terms	AR 310-25
Operational Terms and Symbols	FM 105-5-1
The Standard Army Publications System (STARPUBS) Users Guide	DA Pam 310-10

A-3. FORMS.

Refer to DA Pam 25-30, Consolidated *index of Army Publications and Blank forms,* for a current and complete list of blank forms. Refer to DA Pam 738-750, *The Army Maintenance Management System (TAMMS),* for instructions on the use of maintenance forms pertaining to this materiel.

A-4. FIELD MANUALS.

Aircraft Refueling	FM 10-68
Army Motor Transport Units and Operations	FM 55-30
Basic Cold Weather Manual	FM 31-70
Camouflage	FM 5-20
Desert Operations	FM 90-3
First Aid for Soldiers	FM 21-11
General Fabric Repair	FM 10-16
Manual for Wheeled Vehicle Driver	FM 21-305
Mountain Operations	FM 90-6
NBC Contamination Avoidance	FM 3-3
NBC Decontamination	FM 3-5
NBC Protection	FM 3-4
Northern Operations	FM 31-71

A-4. FIELD MANUALS (Con,t).

Operation and Maintenance of Ordnance Materiel in Cold Weather (0°F to - 65°F)	FM 9-207
Organizational Maintenance of Military Petroleum Pipelines, Tanks, and Related Equipment	FM 10-20
Petroleum Supply Point Equipment and Operations	FM 10-69
Petroleum Tank Vehicle Operations	FM 10-71
Route Reconnaissance and Classification	FM 5-36

A-5. TECHNICAL BULLETINS.

Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment, and Materials Handling Equipment	TB 43-0209
Description, Use, Bonding Techniques, and Properties of Adhesives	TB ORD 1032
Equipment Improvement Report and Maintenance Digest	TB 43-0001-39
Maintenance in the Desert	TB 43-0239
Purging, Cleaning, and Coating Interior Ferrous and Terne Sheet Vehicle Fuel Tanks	TB 43-0212
Security of Tactical Wheeled Vehicles	TB 9-2300-422-20
Standards for Overseas Shipment or Domestic Issue of Special Purpose Vehicles, Combat, Tactical, Construction, and Selected Industrial and Troop Support U.S. Army Tank-Automotive Materiel Readiness Command Managed Items	TB 9-2300-281-35
Tactical Wheeled Vehicles: Repair of Frames	TB 9-2300-247-40

A-6. TECHNICAL MANUALS.

Camouflage Materials	TM 5-200
Organizational, Direct Support and General Support, Care, Maintenance, and Repair of Pneumatic Tires and Inner Tubes	TM 9-2610-200-24
Deep Water Fording of Ordnance Materiel	TM 9-238
Firefighting and Rescue Procedures in Theatres of Operations	TM 5-315
Inspection, Care, and Maintenance of Antifriction Bearings	TM 9-214
Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel and Related Items Including Chemicals	TM 9-247
Operator's Manual for Truck, Tractor: Line Haul, 50,000 GVWR, 6X4, M915 (NSN 2320-01-028-4395)	TM 9-2320-273-10
Operator's Manual for Truck, Tractor: Line Haul, 50,000 GVWR, 6X4, M915A1 (NSN 2320-01-125-2640)	TM 9-2320-283-10
Operator's Manual for Welding Theory and Application	TM 9-237
Organizational Maintenance Manual for Truck, Tractor: Line Haul, 50,000 GVWR, 6X4, M915 (NSN 2320-01-028-4395)	TM 9-2320-273-20

A-6. TECHNICAL MANUALS (Con't).

Organizational Maintenance for Truck, Tractor: Line Haul, 50,000 GVWR, 6X4, M915A1 (NSN 2320-01-125-2640)	TM 9-2320-283-20-1) TM 9-2320-283-20-2, TM 9-2320-283-20-3
Packaging and Materiels Handling: Preparing of Hazardous Materiels for Military Air Shipments	TM 38-250 (AFR 71-4)
Packaging of Materiel: Preservation	TM 38-230-1, TM 38-230-2
Painting Instructions for Field Use	TM 43-0139
Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use (U.S. Army Tank-Automotive Command)	TM 750-244-6
Railcar Loading Procedures	TM 55-601

A-7. OTHER PUBLICATIONS.

Army Medical Department Expendable/Durable Items	CTA 8-100
Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)	CTA 50-970
Marking for Shipment and Storage	MIL-STD-129
Methods of Preservation	MIL-P-116
Packaging of Materiel	AR 700-15
Preparation for Shipment and Limited Storage of Wheeled Vehicles	MIL-V-62038
Preparation for Shipment and Storage of Basic Issue Items for Military Vehicles, Carriages, and Equipment	MIL-B-12841

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at the various maintenance levels.

b. The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels.

c. Section Ill lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and is shown as the third position code of the SMR code.

i. Repair. The application of maintenance services, including fault location/trouble- shooting, removal/installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

B-2. MAINTENANCE FUNCTIONS (Con't).

j. **Overhaul.** That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. **Rebuild.** Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. **Column 1, Group Number.** Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

b. **Column 2, Component/Assembly.** Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. **Column 3, Maintenance Function.** Column 3 lists the functions to be performed on the item listed in Column 2. (For a detailed explanation of these functions, see paragraph B-2.)

d. **Column 4, Maintenance Level.** Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(the level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the Maintenance Allocation Chart. The symbol designations for the various maintenance levels are as follows:

c	*Unit (Operator or Crew)*
0	*Unit (Organizational) Maintenance*
F	*Direct Support Maintenance*
H	General *Support Maintenance*
D	*Depot Maintenance*

e. **Column 5, Tools and Equipment.** Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. **Column 6, Remarks.** This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION Ill.

a. **Column 1, Tool or Test Equipment Reference** Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. **Column 2, Maintenance Level.** The lowest level of maintenance authorized to use the tool or test equipment.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III (Con't).

c. **Column 3, Nomenclature.** Name or identification of the tool or test equipment.

d. **Column 4, National/NATO Stock Number.** The National or NATO Stock Number of the tool or test equipment.

e. **Column 5, Tool Number.** The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. **Column 1, Reference Code.** The code recorded in Column 6, Section II.

b. **Column 2, Remarks.** This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		DS	GS	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment)	Remarks
06	**ELECTRICAL**								
0608	VOLTAGE CONTROL UNIT	REPLACE REPAIR		1.0 1.0				1,2,3,11	
0609	LIGHTS	INSPECT REPLACE REPAIR	0.1	 0.6 1.0				1,2,3,11	
	LAMPS	REPLACE REPAIR		0.2 1.0				1	
0613	CHASSIS WIRING, CONNECTORS, RECEPTACLE VEHICLE COUPLING	INSPECT REPLACE REPAIR		0.4 1.5 1.5				1,2,3,4, 5,11	
11	**REAR AXLE**								
1100	AXLE	INSPECT SERVICE REPLACE ALINE		0.2 1.0 1.0	 6.0 			1,2,3,4,5	
12	**BRAKES**								
1202	SERVICE BRAKES	INSPECT SERVICE REPLACE		1.5 1.0 4.0				1,2,3,4,6	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		DS	GS	Depot		
Group Number	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
1202	SERVICE BRAKES (Con't)								
	CAMSHAFT	REPLACE		1.5					
	SHOE AND LINING	REPLACE		1.5					
		REPAIR			0.6				
1206	SLACK ADJUSTER	ADJUST		0.2					
		REPLACE		1.0					
1208	AIR BRAKE SYSTEM								
	COUPLING, AIR	REPLACE		1.0				1,2,3	
	CHAMBER, AIR	REPLACE		2.0				1,2,3	
	VALVE ASSEMBLY	INSPECT		0.2				1,2,3	
		REPLACE		2.0					
	LINES, FITTINGS, BRAKE INTERLOCK, AND HOSES	INSPECT	0.2					1,2,3	
		REPLACE		1.0					
		REPAIR		1.5					
	AIR RESERVOIRS	REPLACE		1.5				1,2,3	
13	**WHEELS**								
1311	WHEEL ASSEMBLY								
	BEARING. HUB	INSPECT		0.3				1,2,3	
		SERVICE		1.0					
		REPLACE		1.5					
		ADJUST		0.3					
	WHEEL	REPLACE		1.5					
	DRUM, BRAKE	INSPECT		0.3				1,2,3,4,6	
		REPLACE		1.0					
		REPAIR			2.0				
	SEALS AND WIPERS	INSPECT		0.3				1,2,3	
		REPLACE		1.5					
1313	TIRES	INSPECT	0.1					1,2,3,4,6	
		SERVICE	0.4						
		REPLACE		1.0					
		REPAIR			1.0				
	NUTS, STUDS, AND WHEEL RINGS	INSPECT	0.3						
		ADJUST	0.5						
		REPLACE		1.0					

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		DS	GS	Depot		
Group lumber	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
15	**FRAME, TOWING ATTACHMENTS**								
1501	FRAME BUMPERS, BRACKETS	INSPECT REPLACE	0.2	 1.5				1, 2, 3	
	GRABHANDLE	INSPECT REPLACE REPAIR		0.1 0.2	 0.5			5	
	DRAIN LADDER	INSPECT REPAIR	0.1		 1.5			1, 2, 3, 4	
1503	UPPER COUPLER [KINGPIN)	SERVICE REPLACE		0.4	 2.0			1, 2, 3, 4, 6	
1504	CARRIER. SPARE WHEEL	REPLACE		1.2				1, 2, 3	
1507	LANDING GEAR, CRANK, JACK, PAD AND BRACKETS	INSPECT SERVICE REPLACE		0.2 0.2 2.0				1, 2, 3	
16	**SPRINGS AND SHOCK ABSORBERS**								
1601	SPRINGS AND ATTACHING PARTS	INSPECT REPLACE	0.2	 4.0				1, 2, 3	
1605	TORQUE, RADIUS AND EQUALIZER RODS	INSPECT REPLACE	0.2	 2.5				1, 2, 3	
18	**BODY, CAB, HOOD, AND HULL**								
1801	BRACKETS, SPLASH PLATES, MUDFLAPS, AND NOSE ADAPTER	INSPECT REPLACE REPAIR	0.2	 0.5 1.5				1, 2, 3	
1802	FENDERS AND ATTACHING PARTS	INSPECT REPLACE	0.1	 1.0				1, 2, 3	
1808	STOWAGE HOSE TUBES	SERVICE REPLACE		0.2 1.5				1, 2, 3	
	CABINETS	SERVICE REPLACE		0.2	 3.0			1, 2, 3, 4, 5, 6	
	REELS, GROUNDING STUDS	INSPECT REPLACE	0.1	 0.5				1, 2, 3	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1)	(2)	(3)	(4) Maintenance Level					(5)	(6)
			Unit		DS	GS	Depot		
Group lumber	Component/Assembly	Maintenance Function	C	O	F	H	D	Tools and Equipment	Remarks
1811	TANK BODIES								
	COVER, MANHOLE	INSPECT REPLACE REPAIR		2.0				1,2,3	
	TANK	INSPECT TEST REPAIR	0.2			3.0 4.0		5,6,7,8 6,7, 9,10	
22	**BODY CHASSIS OR HULL, AND ACCESSORY ITEMS**								
2202	ACCESSORIES, TRANSFER HOSES, CAPS, FUEL SERVICING	INSPECT REPLACE REPAIR	0.2	0.5				1,2,3,4,6	
2210	DATA PLATES	REPLACE		0.4					
47	**GAGES (NONELECTRICAL), WEIGHING, AND MEASURING DEVICES**								
4702	GAGES. MEASURING	INSPECT REPLACE		0.5	0.7			1,2,3,4,5	
	JET LEVEL SENSOR	REPLACE							
	PRECHECK, JET LEVEL SENSOR	INSPECT REPLACE						1,2,3,4	
	STRAINER	INSPECT SERVICE REPLACE		0.2 0.5				1,2,3,4	
72	**DISPENSING AND SERVICING EQUIPMENT**								
7203	VALVE, EMERGENCY	INSPECT REPLACE REPAIR						1,2,3,4	
	VALVES	INSPECT REPLACE REPAIR						1,2,3,4	

Section II. MAINTENANCE ALLOCATION CHART (Con't)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		DS	GS	Depot		
			C	O	F	H	D		
7203	VALVE, EMERGENCY (Con't)								
	LINES AND FITTINGS	INSPECT SERVICE REPLACE	0.1	 0.2 1.5				1, 2, 3, 4	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Tool or Test Equipment Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
1	O	Tool kit, General Mechanic's, Automotive SC 5180-90-CL-N26	5180-00-177-7033	W 33004
2	O	Shop Equipment, Automotive Maintenance and Repair, Organizational Maintenance Common No. 1 SC 4910-95-CL-A74	4910-00-754-0654	W 32593
3	O	Shop Equipment, Automotive Maintenance and Repair, Organizational Maintenance, Common No. 1, Less Power SC4910-95-CL-A73	4910-00-754-0653	W 32867
4	O	Shop Equipment, Automotive Maintenance and Repair, Unit Maintenance, Common No. 2, Less Power SC 4910-95-CL-A72	4910-00-754-0650	W 32730
5	F, H	Tool kit, Welder's SC 5180-90-CL-N39	5810-00-754-0661	W 58075
6	F, H	Shop Equipment, Automotive Maintenance and Repair, Field Maintenance SC 4910-95-CL-A31	4910-00-754-0705	T24660
7	F, H	Shop Equipment, Automotive Maintenance and Repair, Field Maintenance, Supplement SC 4910-95-CL-A62	4910-00-754-0706	T25619
8	O	Combustible Gas Indicator Set	6665-00-292-9945 6665-00-664-4650	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS (Con't)

(1) Tool or Test Equipment Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
9		[Item Deleted]		
10		[Item Deleted]		
11	O	Wire Terminal Kit	5940-00-450-5802	

Section IV. REMARKS

Not Applicable.

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists Components of End Item and Basic Issue Items for the M1062 7500 Gallon Fuel Tank Semitrailer to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. **Section II. Components of End Item (COEI).** This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. **Section III. Basic Issue Items (Bll).** These are the minimum essential items required to place the semitrailer in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the semitrailer during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement Bll, based upon TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listing:

a. **Column (1) - Illustration Number (Illus Number).** This column indicates the number of the illustration in which the item is shown.

b. **Column (2) - National Stock Number.** Indicates the National Stock Number (NSN) assigned to the item and will be used for requisitioning purposes.

c. **Column (3) - Description.** Indicates the Federal item name and, if required, a description to identify and locate the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses, followed by the part number.

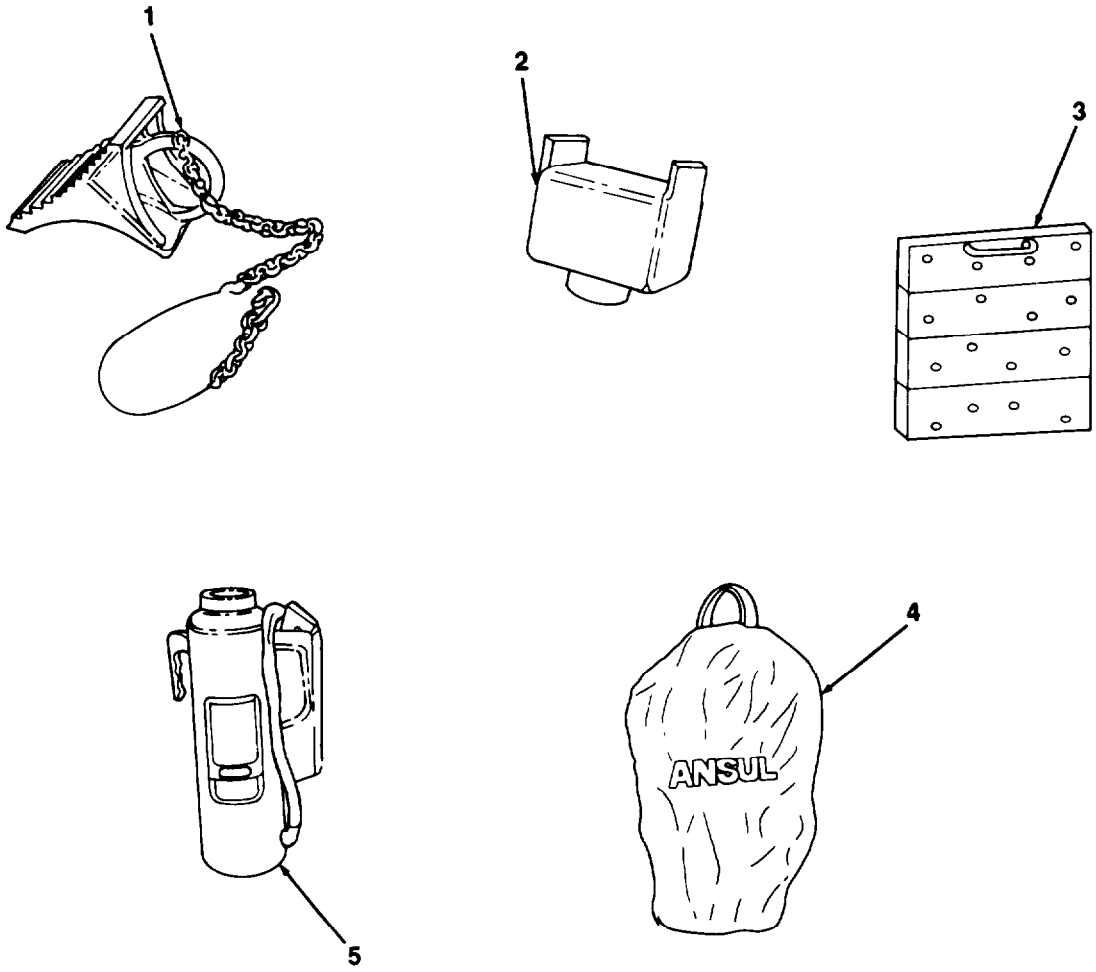
d. **Column (4) - Unit of Measure (U/M).** Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. **Column (5) - Quantity Required (Qty Rqr).** Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

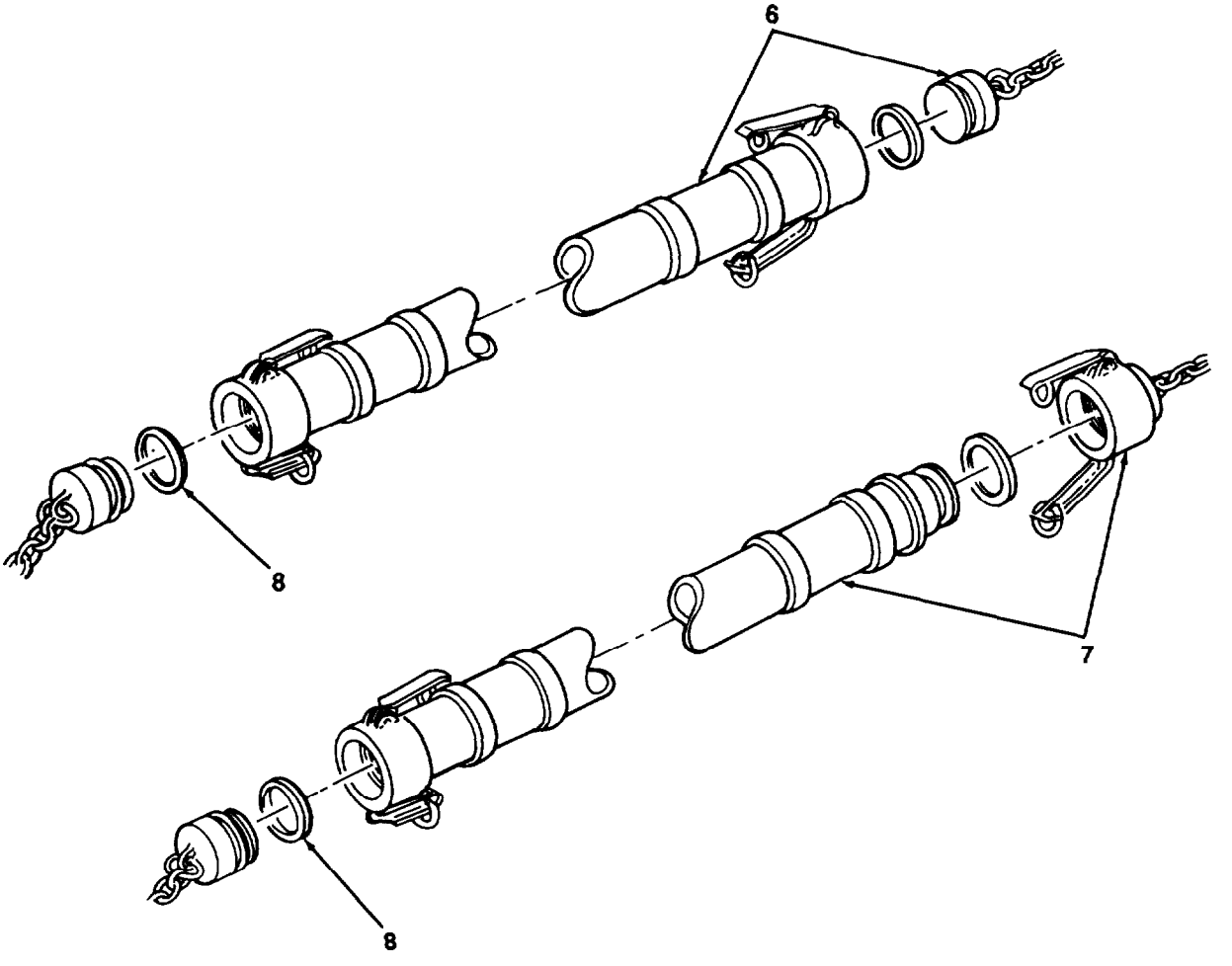
The M1062 7500 Gallon Fuel Tank Semitrailer does not have any Components of End Item currently assigned.

Section III. BASIC ISSUE ITEMS



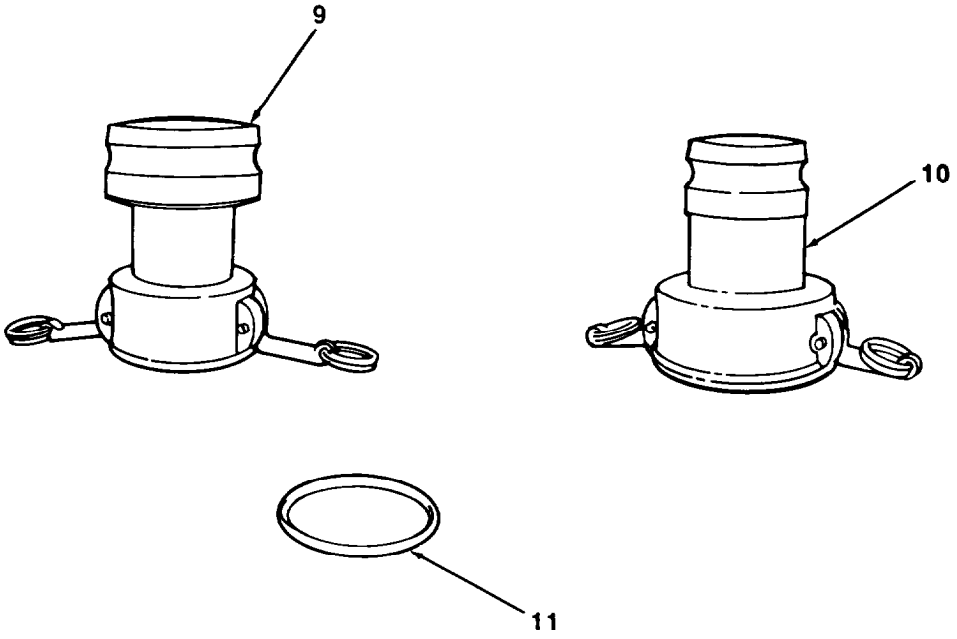
(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Qty Rqr
1	2540-01-290-9726	BLOCK, CHOCK: (in center fender bracket) (5G881) 43HO	ea	2
2		BLOCK, JACKING: (used wlth tractor jack) (in cabinet) (74841) TKG 5455-1	ea	1
3	2510-00-741-7585	BOARD, GROUND, JACK: (19207) 7417585	ea	2
4	5340-01-290-2727	COVER, WEATHERPROOF: (for fire extinguisher) (7L093) 67637	ea	2
5	4210-01-290-0755	EXTINGUISHER, FIRE: (7L093) A-A-393	ea	2

Section III. BASIC ISSUE ITEMS (Con't)



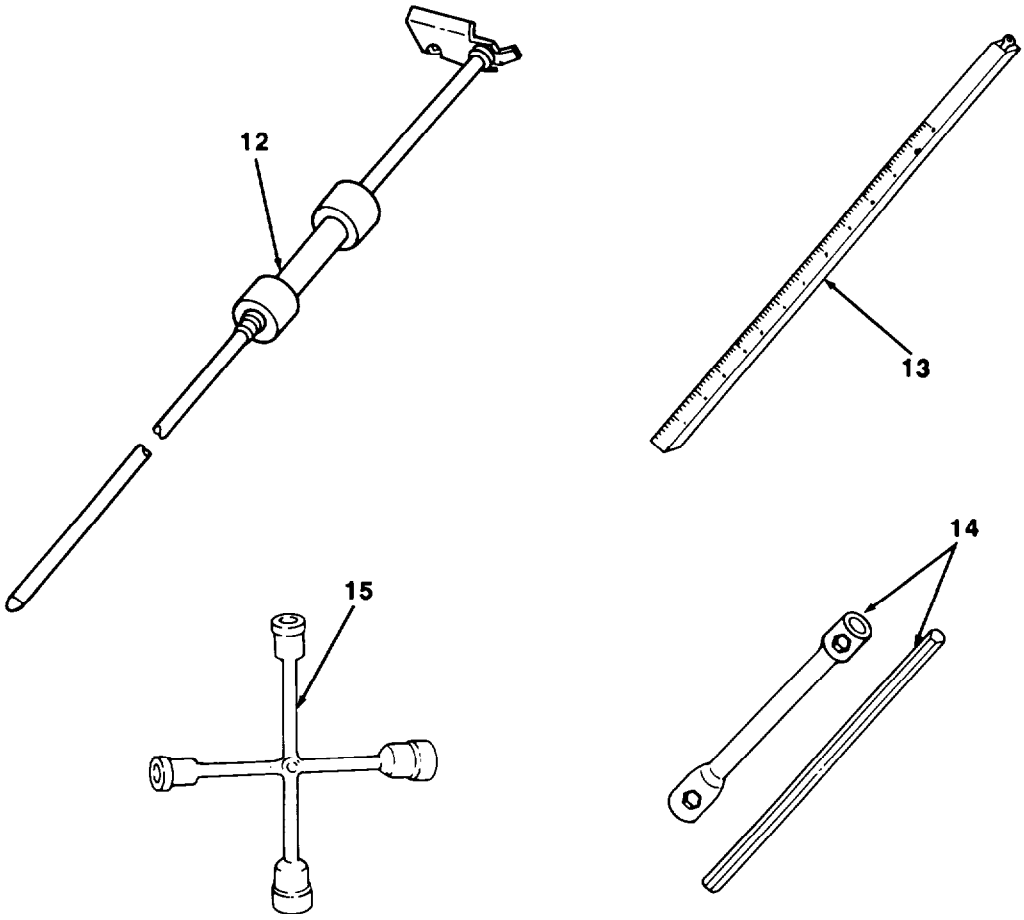
(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Qty Rqr
6	4720-01-096-4390	HOSE ASSEMBLY, TRANSFER: (in curbside stowage tube assembly) (19207) 11685834	ea	1
7	4720-01-087-5876	HOSE ASSEMBLY, TRANSFER: (in curbside stowage tube assembly) (19207) 11685835	ea	1
8	5330-00-899-4509	GASKET : (use with hose assembly #11685834 or #11685835) (96906) MS 27030-9	ea	2

Section III. BASIC ISSUE ITEMS (Con't)



(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Qty Rqr
9	4730-00-951-3293	REDUCER: (in cabinet) (33813) 40CX30A	ea	1
10	4730-00-951-3296	REDUCER: (in cabinet) (33813) 30CX40A	ea	1
11	5330-00-899-4509	GASKET: (use with reducer #40CX30A or #30CX40A) (96906) MS 27030-9	ea	1

Section III. BASIC ISSUE ITEMS (Con't)



(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Qty Rqr
12	5975-01-050-5707	ROD, GROUND: (in roadside stowage tube assembly) (97403) 13219EO462	ea	1
13		STICK, GAGE: (in curbside stowage tube assembly) (74841) TKG 5057-1	ea	1
14		WRENCH, LUG: (supplied with semitrailer) (in cabinet) (74841) TKG 5065-1	ea	1
15	5120-01-077-7725	WRENCH, LUG: (order when replacement required) (39428) 6679F2	ea	1

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE.

a. This appendix lists additional items you are authorized for the support of the M1062 7500 Gallon Fuel Tank Semitrailer.

b. This list identifies items that do not have to accompany the M1062 Tank Semitrailer and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-2. EXPLANATION OF LISTING.

National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Description FSCM and Part Number	(3) U/M	(4) Qty Auth
4930-01-445-8098	Adapter, Pressure Fuel (13854) 13854	ea	1
6150-01-319-2582	Cable Assembly, Power (79409) 40707	ea	1
5340-00-558-8826	Insert, Screw Thread (19207) 12296642	ea	1
4730-00-069-1187	Elbow, Pipe to Tube (93061) 269NTA-6-4	ea	1
5330-01-205-8991	Gasket (65063) 8422A388A	ea	1
5310-01-346-9445	Nut, Self-Locking (45152) 1600460	ea	3
6220-01-354-7394	Orange Bubble (65063) 8422C002-04	ea	1
5330-01-169-8057	Packing, Preformed (92003) 2661058A153	ea	1
P/N-12296639-1	Pipe, Black (3/4" NPT x 2") 12296639-1	ea	1

Section II. ADDITIONAL AUTHORIZATION LIST (Con't)

(1) National Stock Number	(2) Description FSCM and Part Number	(3) U/M	(4) Qty Auth
4930-01-133-6942	Poppet Assembly (79318) 2721404	ea	1
5340-01-415-8674	Ring Clamp (98905) 8422537A	ea	1
5305-01-337-9120	Screw, Cap, Hexagon Head (45152) 1754140	ea	3
5940-00-926-0085	Terminal, Quick Disconnect (59661) 95643216-5	ea	1
5310-01-198-7838	Washer (14109) FSP7-2-1	ea	3
6220-01-355-4371	Warning Light (45152) 1795570	ea	1
5310-00-582-5965	Washer, Lock (96906) MS 35338-44	ea	3

APPENDIX E
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE.

This appendix lists all expendable/durable supplies and materials you will need to operate and maintain the M1062 7500 Gallon Fuel Tank Semitrailer. These items are authorized to you by CTA 50-970, *ExpendablelDurable Items (Except* Medical, *Class V, Repair* Parts, *and* Heraldic *Items),* or CTA 8-100, *Army* Medical *Department Expendable/Durable Items.*

E-2. EXPLANATION OF COLUMNS.

a. **Column (1) - Item Number.** This number is assigned to the entry in the listing and is referenced in the INITIAL *SETUP* of maintenance paragraphs or narrative instructions to identify the material needed.

b. **Column (2) - Level.** This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew	F - Direct Support
O - Unit (Organizational)	G - General Support

c. **Column (3)** - **National Stock Number.** This is the National Stock Number assigned to the item: use it to request or requisition the item.

d. **Column (4)** - **Description.** Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses, followed by the part number, if applicable.

e. **Column (5) - Unit of Measure (U/M).** Indicates the measure used in performing the actual maintenance function. This measure is expressed by an alphabetical abbreviation (e.g., ea, in, gal). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item lumber	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	O		ANTIFREEZE: Ethylene Glycol. Inhibited. Heavy-duty, Single Package (81349) MIL-A-46153	
		6850-00-181-7929	1 Gallon Can	gal
		6850-00-181-7933	5 Gallon Can	gal
		6850-00-181-7940	55 Gallon Drum	gal
2	O		BARRIER MATERIEL: Greaseproof (81349) MIL-B-121	
		8135-00-171-0930	100 Yard Roll	yd
3	O	8020-00-297-6658	BRUSH: Paint. Oval 1-1/8 in.. H-B-491, Type I. Class 2, Style 10	
4	O		CHALK: Marking (81348) SS-C-255	ea
		7510-00-223-6701	1 Gross	gr
5	O		CLOTH: Abrasive, Crocus (81348) P-C-458	
		5350-00-221-0872	50 Sheets	sh
6	O		COMPOUND: Deck Cover, Type 2 MIL-C-81346B	
		8010-01-024-4008	55 Gallon Drum	gal
7	O		CORROSION PREVENTIVE COMPOUND: (81349) MIL-C-83933	
		8030-00-935-7158	1 Gallon Can	gal
8	O		CORROSION PREVENTIVE COMPOUND: (81349) MIL-C-11796	
		8030-00-231-2354	5 Pound Carton	lb
9	C		DETERGENT: General Purpose, Liquid (81349) MIL-D-16791	
		7930-00-282-9699	1 Gallon Can	gal

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (Con't)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
10	C		DRY CLEANING SOLVENT: Type II (81348) P-D-680	
		6850-00-110-4498	1 Pint Can	pt
		6850-00-274-5421	5 Gallon Can	gal
		6850-00-285-8011	55 Gallon Drum	gal
11	C		FUEL OIL, DIESEL: Winter, DF-1 (81348) VV-F-800	
		9140-00-286-5287	5 Gallon Can	gal
		9140-00-286-5286	55 Gallon Drum	gal
12	C		GREASE: Automotive and Artillery (81349) MIL-G-10924	
		9150-00-935-1017	14 Ounce Cartridge	oz
		9150-00-190-0904	1-3/4 Pound Can	lb
		9150-00-190-0905	6-1/2 Pound Can	lb
13	O		GREASE: Ball and Roller Bearing (73219) 18901	
		9150-01-095-5512	14 Ounce Can	oz
14	C		LUBRICATING OIL: Engine PE-10-1 (81349) MIL-L-21260	
		9150-00-111-3199	5 Gallon Can	gal
		9150-00-111-0208	55 Gallon Drum	gal
15	C		LUBRICATING OIL: Gear, Multipurpose, GO 80/90 (81349) MIL-L-2105	
		9150-01-035-5392	1 Quart Can	qt
		9150-01-035-5393	5 Gallon Can	gal
16	C		LUBRICATING OIL: OE/HDO 30 (81349) MIL-L-2104	
		9150-00-186-6881	1 Quart Can	qt
		9150-00-188-9858	5 Gallon Can	gal
		9150-00-189-6729	55 Gallon Drum	gal
17	C		PAPERBOARD: Wrapping and Cushioning (81348) PPP-P-291	
		8135-00-290-3402	250 Foot Roll	ft

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (continued)

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
18	C		RAG: Wiping, Cotton and Cotton Synthetic (58536) A-A-531	
		7920-00-205-1711	50 Pound Bale	lb
18.1	O	6850-01-159-4844	SILICONE COMPOUND (11862) 12346193	oz
19	O	3439-00-247-6921	SOLDER: Lead (81348) QQ-S-571	in
20	C		STABILIZER ADDITIVE (81349) MIL-S-53021	
		6850-01-246-6544	5 Gallon Can	gal
		6850-01-246-6545	55 Gallon Drum	gal
21	O		TAG: Marker (81349) MIL-T-12755	ea
		9905-00-537-8954	50 Each	
22	O		TAPE: Antiseize, 1/2 Inch width (81349) MIL-T-27730A	
		8030-00-889-3535	260 Inch Roll	in
23	O		TAPE: Duct, 2 Inch Width (07124) C-519	
		5640-00-103-2254	60 Yard Roll	yd
24	O		TAPE: Mylar (74841)	
			3 Inch Width STK 70062	ft
			6 Inch Width STK 70095	ft
25	C		TAPE: Pressure Sensitive Adhesive (81348) PPP-T-97	
		7510-00-952-7212	60 yard roll	yd
26	O		TAPE: Pressure Sensitive Adhesive, Masking, Flat, 2 Inch Width (81349) MIL-T-2397	
		7510-00-473-9513	60 Yard Roll	yd

APPENDIX F
REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

F-1. SCOPE.

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of operator's, organizational, and direct support and general support maintenance of the M1062 7500 Gallon Fuel Tank Semitrailer. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the Source, Maintenance, and Recoverability (SMR) codes.

F-2. GENERAL.

In addition to Section I. Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. **Section ii, Repair Parts List.** A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materiels are listed in item name sequence. Repair kits are listed separately in their own functional group within Section II. Repair parts for reparable special tools are also listed in this section.

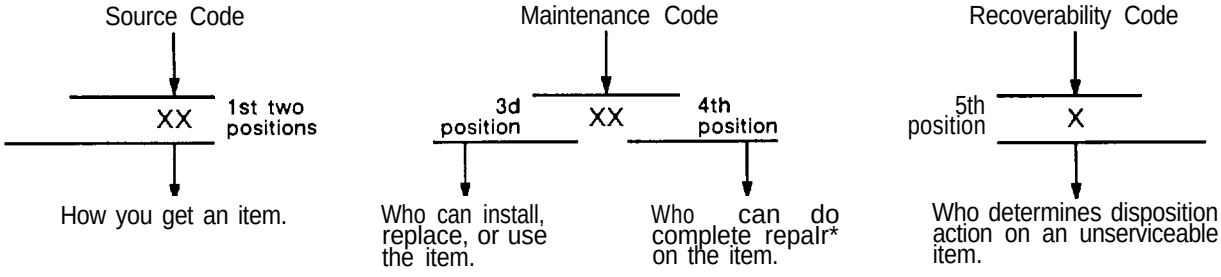
b. **Section iii, Special Tools List.** A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL [as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE column] for the performance of maintenance.

c. **Section IV, Cross-reference index.** A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. The figure and item number index lists figure and item numbers in alphanumeric sequence and cross-references NSN, CAGE, and part numbers.

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

a. **ITEM NO. [Column (1)].** Indicates the number used to identify items called out in the illustration.

b. **SMR CODE [Column (2)].** The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:



* Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (Con't).

(1) **Source Code.** The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Code	Application/Explanation
PA PB PC** PD PE PF PG	Stocked items: use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code. ** Items coded PC are subject to deterioration,
MO - (Made at Unit Level) MF - (Made at DS Level) MH - (Made at GS Level) MD - (Made at Depot)	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk materiel which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk materiel group of the repair parts list in this RPSTL. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO - (Assembled by Unit Level) AF - (Assembled by DS Level) AH - (Assembled by GS Level) AD - (Assembled at Depot)	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicted by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates that the item is assembled at a higher level, order the item from the higher level of maintenance.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the following source codes, except for those source coded "XA"

XA - DO NOT requisition an "XA"-coded item. Order its next higher assembly.

XB - If an "XB" item is not available from salvage, order it using the CAGE and part number given.

XC - Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

XD - Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGE and part number given, if no NSN is available.

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (Con't).

(2) **Maintenance Code.** Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance.

Code		Application/Explanation
C	-	Crew or operator maintenance done within unit maintenance.
O	-	Organizational level can remove, replace, and use the item.
F	-	Direct support level can remove, replace, and use the item.
H	-	General support level can remove, replace, and use the item.
D	-	Depot level can remove, replace, and use the item.

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized *"Repair"* functions). This position will contain one of the following maintenance codes:

Code		Application/Explanation
O	-	Organizational is the lowest level that can do complete repair of the item.
F	-	Direct support is the lowest level than can do complete repair of the item.
H	-	General support is the lowest level that can do complete repair of the item.
D	-	Depot is the lowest level that can do complete repair of the item.
Z	-	Nonreparable. No repair is authorized.
B	-	No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B"-coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

(3) **Recoverability Code.** Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND III) (Con't).

Recoverability Codes		Application/Explanation
Z	-	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the 3d position of the SMR code.
O	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at unit level.
F	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the intermediate direct support level.
H	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the intermediate general support level.
D	-	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
A	-	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical materiel, or hazardous materiel). Refer to appropriate manuals/directives for specific instructions.

c. **CAGEC [Column (3)].** The Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part ordered.

d. **PART NUMBER [Column (4)].** Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

e. **DESCRIPTION AND USABLE ON CODE (UOC) [Column (5)].** This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

(3) Part numbers for bulk materiels are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(4) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(5) The usable on code, when applicable (see paragraph F-5, Special information).

(6) The statement “END OF FIGURE” appears just below the last item description in Column 5 for a given figure in both Section II and Section III.

F-3. EXPLANATION OF COLUMNS (SECTIONS II AND Ill) (Con't).

f. **QTY [Column (6)].** The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

F-4. EXPLANATION OF COLUMNS (SECTION IV).

a. National Stock Number (NSN) Index.

(1) *STOCK NUMBER* Column. This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (e.g., 5305-01-674-1467). When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) *F/G.* **Column.** This column lists the number of the figure where the item is identified/ located. The figures are in numerical order in Section II and Section III.

(3) *ITEM* **Column.** The item number identifies the item associated with the figure listed in the adjacent *FIG.* column. This item is also identified by the NSN listed on the same line.

b. **Part Number Index.** Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) *CAGEC* **Column.** The Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

(2) *PART NUMBER* **Column.** Indicates the primary number used by the manufacturer (individual company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards and inspection requirements to identify an item or range of items.

(3) *STOCK NUMBER* **Column.** This column lists the NSN for the associated part number and manufacturer identified in the PART *NUMBER* and CAGEC columns to the left.

(4) *FIG.* **Column.** This column lists the number of the figure where the item is identified/ located in Section II and Section Ill.

(5) *ITEM* **Column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

c. **Figure and Item Number Index.**

(1) *F/G.* **Column.** This column lists the number of the figure where the item is identified/ located in Section II and Section Ill.

(2) *ITEM* **Column.** The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

(3) *STOCK NUMBER* **Column.** This column lists the NSN for the item.

(4) CAGE **Column.** The Commercial and Government Entity (CAGE) Code (C) is a 5-digit alphanumeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

F-4. EXPLANATION OF COLUMNS (SECTION IV) (Con't).

(5) *PART NUMBER* **Column.** Indicates the primary number used by the manufacturer (individual company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards and inspection requirements to identify an item or range of items.

F-5. SPECIAL INFORMATION.

a. **Usable On Code.** The usable on code appears in the lower left corner of the *DESCRIPTION* column heading. Usable on codes are shown as "UOC: . . . . . " in the *DESCRIPTION* column (justified left) on the first line following applicable item description/nomenclature.

b. **Fabrication Instructions.** Bulk materiels required to manufacture items are listed in the Bulk Materiel Functional Group of this RPSTL. Part numbers for bulk materiels are also referenced in the *DESCRIPTION* column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in Appendix G of this manual.

c. **Assembly Instructions.** Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in Chapters 4 and 5 of this manual. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

d. **Kits.** Not applicable. There currently are no kits assigned to the M1062 7500 Gallon Fuel Tank Semitrailer.

e. **Index Numbers.** Items which have the word "BULK" in the *FIG.* column will have an index number shown in the ITEM column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk materiel list in Section II.

f. **Associated Publications.** Not applicable.

F-6. HOW TO LOCATE REPAIR PARTS.

a. **When National Stock Number or Part Number is Not Known:**

(1) **First.** Using the Table of Contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) **Second.** Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) **Third.** Identify the item on the figure and use the Figure and Item Number Index to find the NSN.

b. **When National Stock Number or Part Number is Known:**

(1) **First.** Using the National Stock Number or Part Number Index, find the pertinent National Stock Number or Part Number. The NSN Index is in National Item Identification Number (NIIN) sequence [see paragraph F-4.a.(1)]. The part numbers in the Part Number Index are listed in ascending alphanumeric sequence (see paragraph F-4. b). Both indexes cross-reference you to the illustration/figure and item number of the item you are looking for.

(2) **Second.** After finding the figure and item number, turn to the illustration figure, verify that the item is the one you're looking for, then locate the item number in the repair parts list for the figure.

F-7. ABBREVIATIONS.

For standard abbreviations see MIL-STD-12, *Military Standard Abbreviations for Use on Drawings, Specifications, Standards, and In Technical Documents.*

Abbreviations	*Explanation*
NIIN	National Item Identification Number (consists of the last 9 digits of the NSN)
RPSTL	Repair Parts and Special Tools List

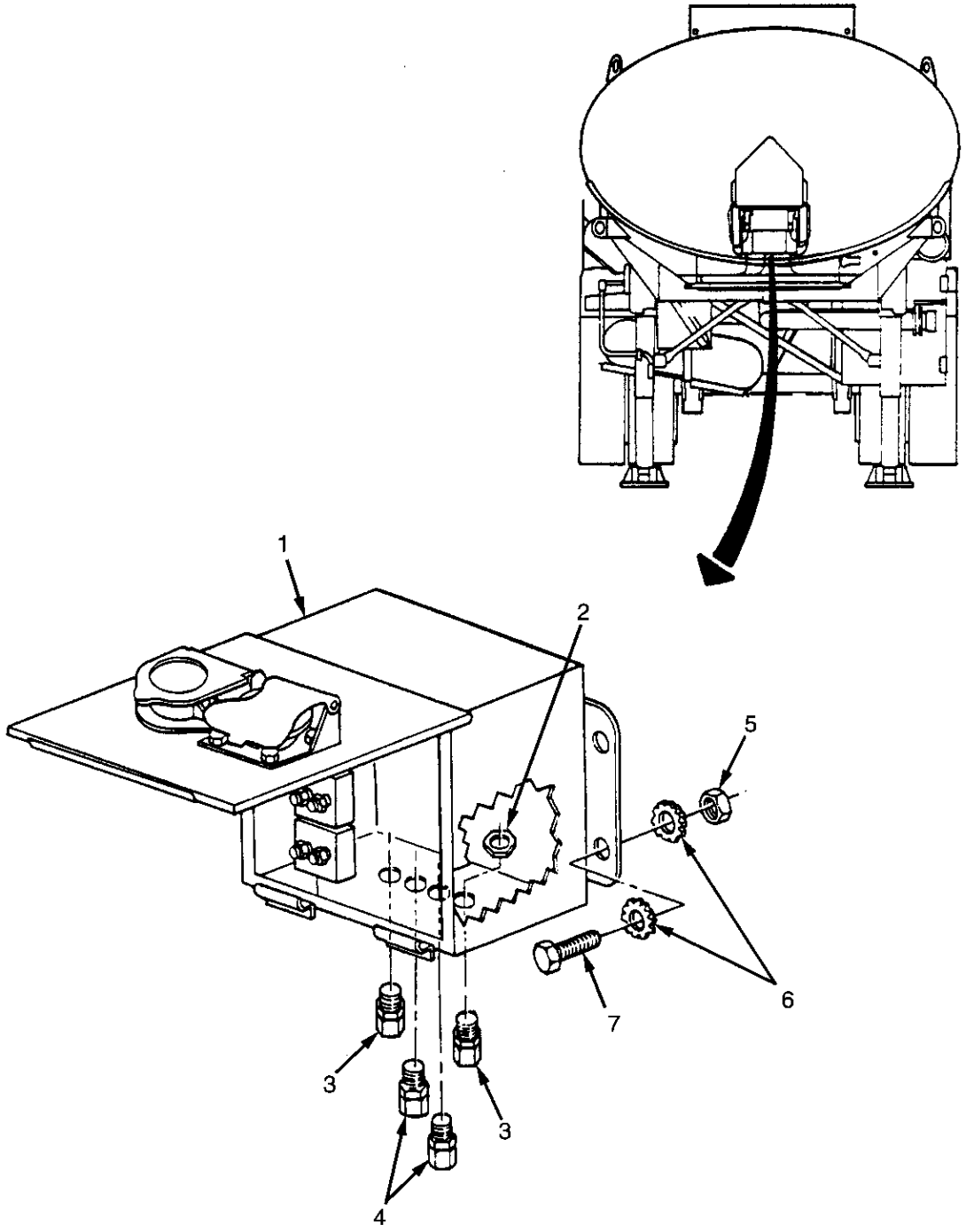


Figure 1. Voltage Control Unit and Mounting Hardware.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 06 ELECTRICAL SYSTEM	
					GROUP 0608 MISCELLANEOUS ITEMS	
					FIG. 1 VOLTAGE CONTROL UNIT AND MOUNTING HARDWARE	
* 1	PAOZZ	6110014286031	4J564	DT-308	CONTROL, ELECTRICAL FOR COMPONENT PARTS SEE FIG.2.....	1
* 2	PAOZZ	5975001521075	03743	BL50	LOCKNUT,ELECTRICAL.....	4
* 3	PAOZZ	4730012970172	61424	N6MC8	ADAPTER,STRAIGHT,PI.....	2
* 4	PAOZZ	4730012970171	61424	N10MC8	ADAPTER,STRAIGHT,PI.....	2
5	PAOZZ	5310000614650	96906	MS51943-31	NUT,SELF-LOCKING,HE.....	4
6	PAOZZ	5310008942353	96906	MS16213-61	WASHER,LOCK.....	8
7	PAOZZ	5305002253843	80204	B1821BH025C100N	SCREW,CAP,HEXAGON H.....	4
					END OF FIGURE	

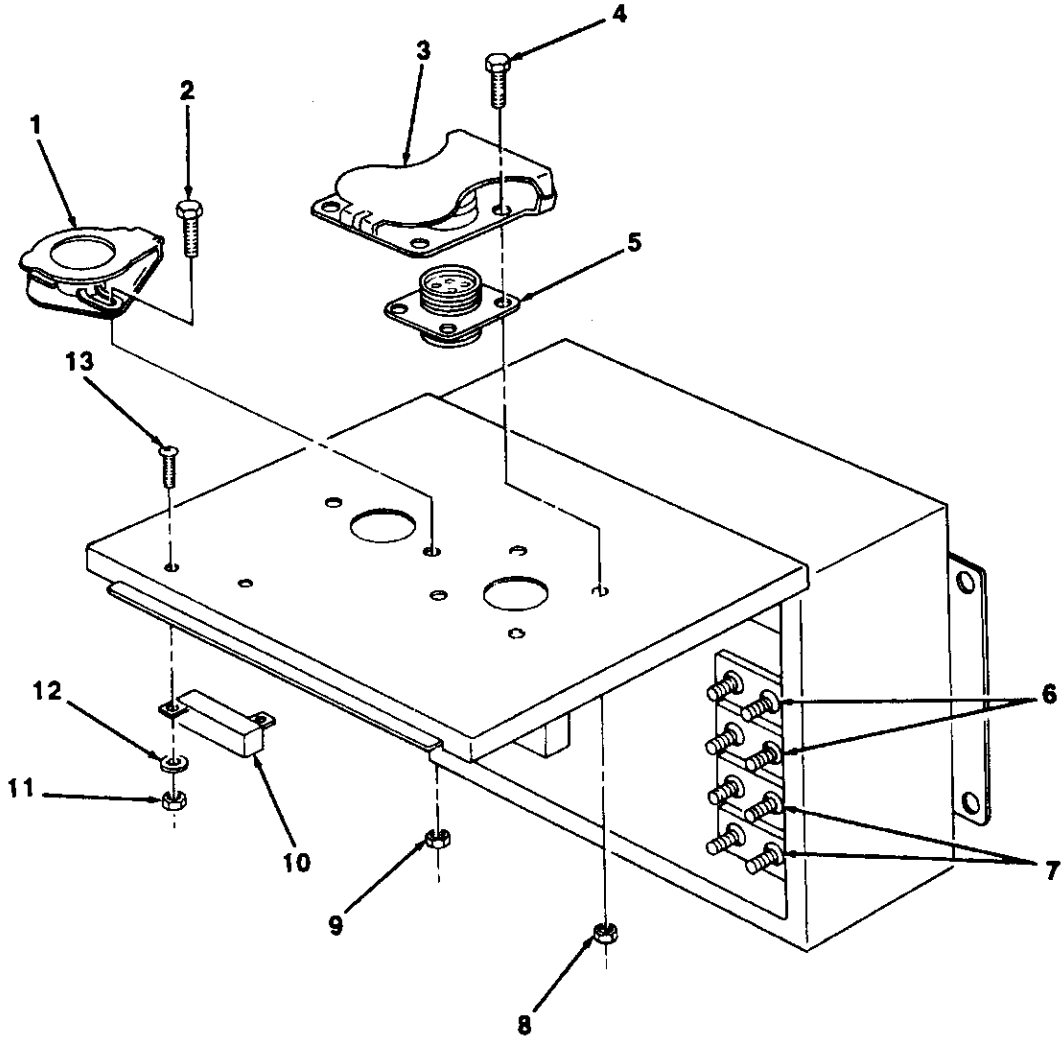


Figure 2. Control Box Component Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 0608 MISCELLANEOUS ITEMS	
					FIG. 2 CONTROL BOX COMPONENT PARTS	
1	PAOZZ	5935008563513	81343	SAEJ560	CONNECTOR,PLUG,ELEC (12 VOLT).....	1
* 2	PAOZZ	5306002264824	80204	B1821BH031C063N	BOLT,MACHINE.....	2
3	PAOZZ	5935008463884	96906	MS75021-2	CONNECTOR,RECEPTACL (24 VOLT).....	1
4	PAOZZ	5305000680500	96906	MS90725-3	SCREW,CAP,HEXAGON H.....	4
5	PAOZZ	5935008463883	96906	MS75021-1	CONNECTOR,RECEPTACL (24 VOLT).....	1
* 6	PAOZZ	5925011904632	89346	714250C1	CIRCUIT BREAKER.....	1
* 7	PAOZZ	5925009001904	13445	30056-10	CIRCUIT BREAKER.....	8
8	PAOZZ	5310005845005	68505	8X163	NUT,PLAIN,HEXAGON.....	4
9	PAOZZ	5310004093355	24617	120376	NUT,PLAIN,HEXAGON.....	2
10	PAOZZ	5905005538197	81349	RER75F1502R	RESISTOR,FIXED,WIRE.....	2
11	PAOZZ	5310009349739	96906	MS35649-242	NUT,PLAIN,HEXAGON.....	4
12	PAOZZ	5310002641337	34895	1041571-5	WASHER,LOCK.....	4
13	PAOZZ	5305008892997	96906	MS35206-215	SCREW,MACHINE.....	4
					END OF FIGURE	

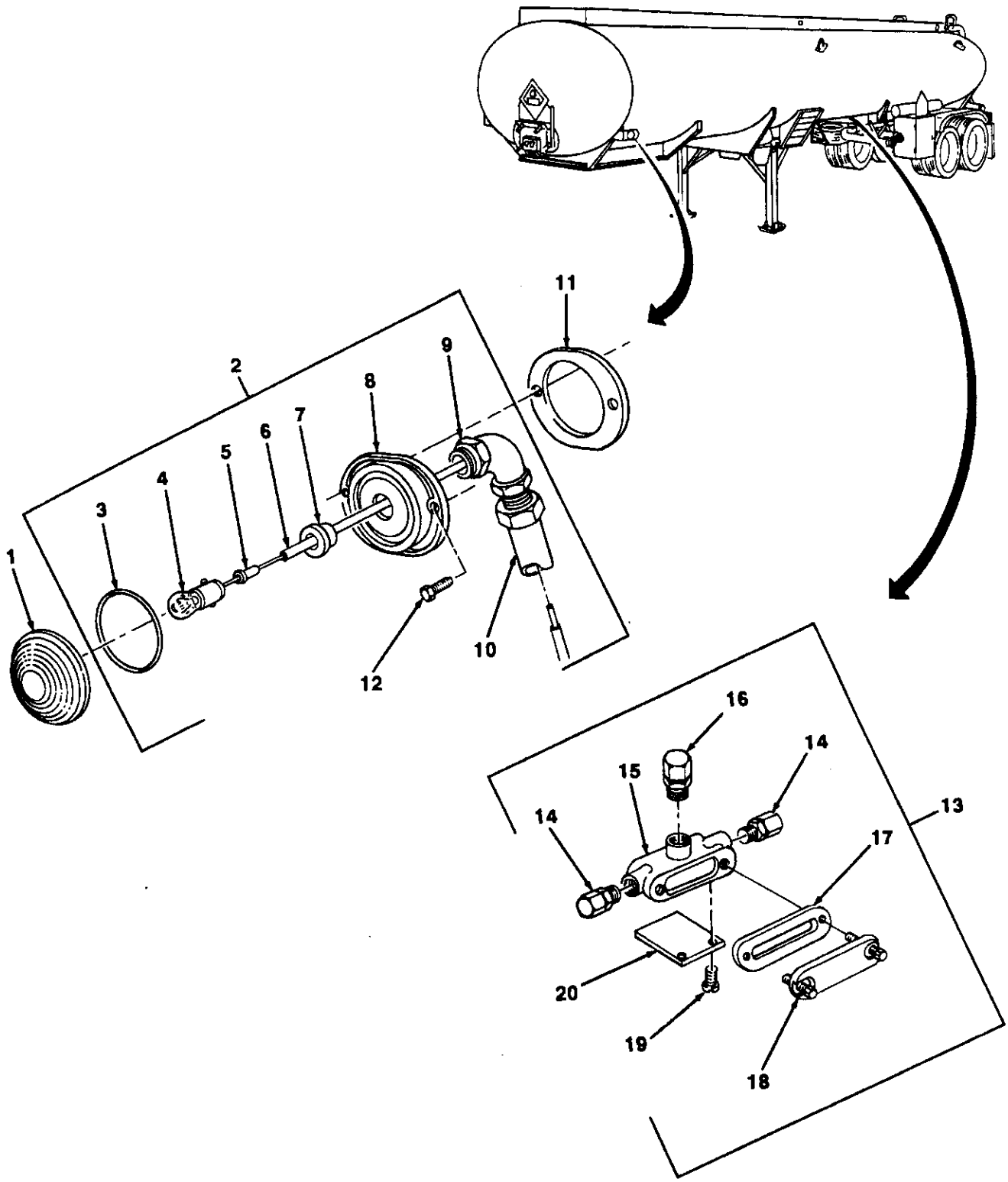


Figure 3. Front and Side Marker Lights and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP: 0609 LIGHTS	
					FIG. 3 FRONT AND SIDE MARKER LIGHTS AND RELATED PARTS	
1	PAOZA	6220008975856	13226	51A	LENS,LIGHT (AMBER).....	4
2	PBOOO	6220012856082	74841	TKG5310-1	LIGHT,MARKER,CLEARA.....	2
2	PBOOO	6220013151458	74841	TKG5310-2	LIGHT,MARKER,CLEARA.....	2
3	PAOZZ	5331008975859	13226	52	.O-RING.....	1
4	PAOZZ	6240009145572	08108	97	.LAMP,INCANDESCENT.....	1
5	PAOZZ	5999011803411	13226	920120	.LIGHT-SWITCH.....	1
* 6	MOOZZ		74841	STK14373-1	.WIRE,14GA,BLACK (5.5 FT LG) MAKE FROM P/N M22759-14-14-1.....	1
6	MOOZZ		74841	STK14373-6	.WIRE,14GA,BLACK FOR SIDE LIGHT (1.5 FT LG) MAKE FROM P/N M22759-14-14-1.....	1
7	PAOZZ	5325011271390	13226	920123	.GROMMET,METALLIC.....	1
8	PAOZA	6220009058498	13226	B-50500012	.LIGHT,MARKER,CLEARA.....	1
9	PAOZZ	4730012899537	93061	N6ME4	.ELBOW,PIPE TO TUBE.....	1
* 10	MOOZZ		74841	LKA3332-1	.TUBING (4.5 FT LG) MAKE FROM P/N 8588.....	1
10	MOOZZ		74841	LKA3332-4	.TUBING (1.0 FT.LG) MAKE FROM P/N 8588.....	1
11	PAOZZ	5330010823189	13226	59	GASKET.....	2
12	PAOZZ	5305012888320	24617	163137	SCREW,TAPPING.....	12
13	PAOOO	5975013172425	74841	TKG5526-1	TEE,ELECTRICAL COND.....	2
14	PAOZZ	4730012970171	61424	N10MC8	.ADAPTER,STRAIGHT,PI.....	2
15	PAOZZ	4730013193381	74841	TKG0571-1	.TEE,HOSE.....	1
16	PAOZZ	4730012970172	61424	N6MC8	.ADAPTER,STRAIGHT,PI.....	1
17	PAOZZ	5330013181911	74841	TKG0573-1	.GASKET.....	1
18	PAOZZ	5340013203920	74841	TKG0572-1	.COVER,ACCESS.....	1
19	PAOZZ	5320011235674	96906	MS20600B8W6	.RIVET,BLIND.....	2
20	PAOZZ	5340013182042	74841	TKG0084-4	.PLATE,MENDING.....	1
					END OF FIGURE	

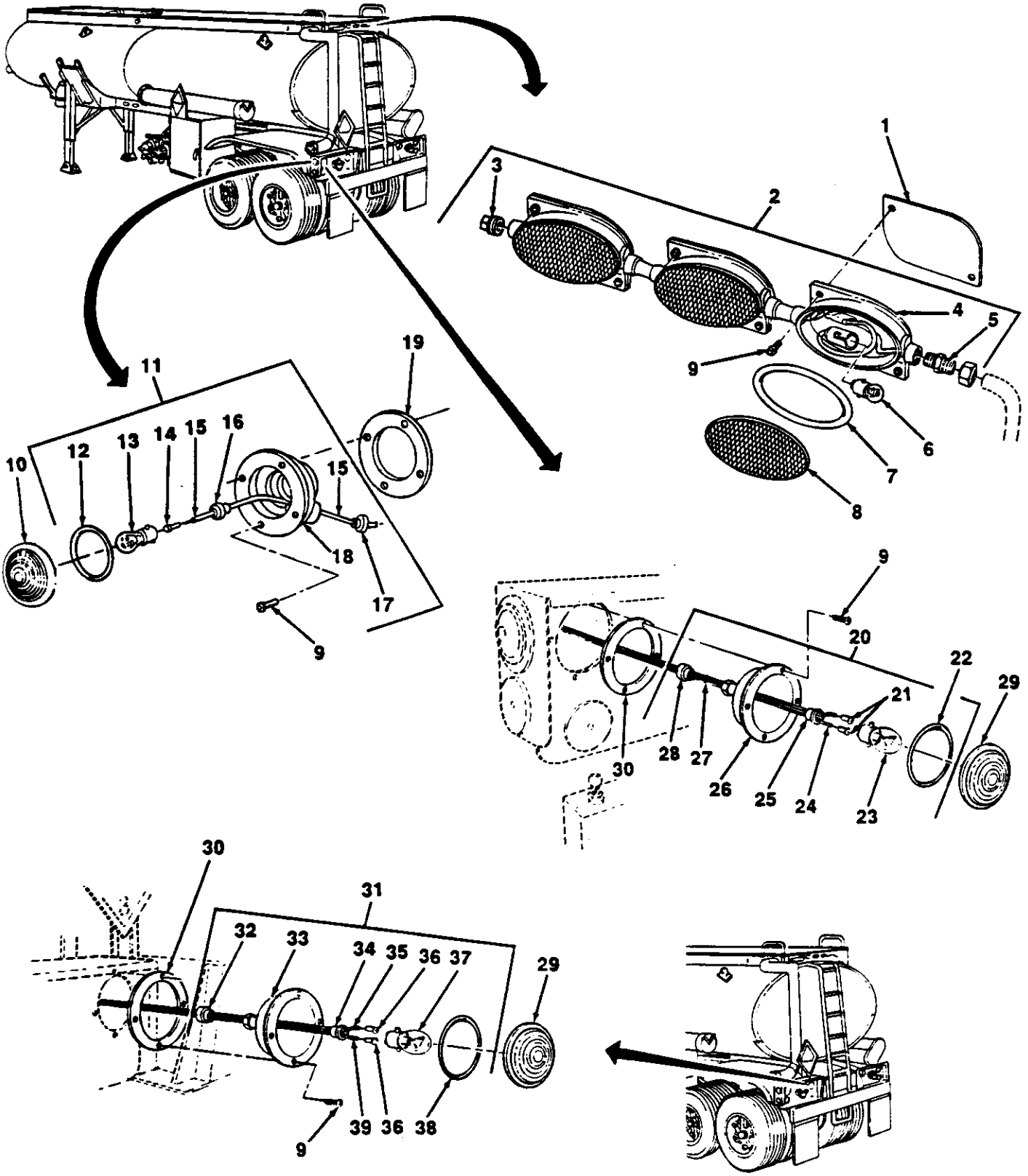


Figure 4. Rear Side Marker Light Assembly, Rear Marker Light, and Stop, Turn Signal, and Taillight Assembly.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 0609 LIGHTS	
				FIG. 4 REAR SIDE MARKER LIGHT ASSEMBLY , REAR MARKER LIGHT, AND STOP, TURN SIGNAL, AND TAILLIGHT ASSEMBLY	
1	PAOZZ	13226	209	GASKET	3
2	PBOOO	74841	TKG5313-1	LIGHT ASSEMBLY,CLEA	1
3	PAOZZ	98441	1/8HHP-S	.PLUG,PIPE	1
4	PAOZZ	13226	M210-01-0365	.LIGHT ASSEMBLY ,CLEA	I
5	PAOZZ	93061	68C-6-2	.ADAPTER .STRAIGHT,PI	1
6	PAOZZ	08108	97	.LAMP, INCANDESCENT	3
7	PAOZZ	13226	202	.PACKING,PREFORMED	3
6	PAOZZ	13226	201R	LENS,LIGHT (RED)	3
9	PAOZZ	24617	162847	SCREW ,TAPPING,THREA	30
10	PAOZZ	13226	51R	LENS,LIGHT	2
11	PBOOO	74841	TKG5311-2	LIGHT (MARKER ,CLEARA	2
12	PAOZZ	13226	52	.PACKING,PREFORMED	1
13	PAOZZ	08108	97	.LAMP,INCANDESCENT	1
14	PAOZZ	13226	55A	.LIGHT-SWITCH	1
15	MOOZZ	74841	STK14372-4	.WIPE,14 GAUGE (2 FT LG) MAKE FROM PN M22759/14-14-8	1
16	PAOZZ	13226	56	.GROMMET,METALLIC	1
17	PAOZZ	96906	MS35489-97	.GROMMET,NONMETALLIC	1
18	PAOZZ	13226	B-6C	.LIGHT,MARKER,CLEARA	1
19	PAOZZ	13226	69	PACKING, PREFORMED	2
20	PBOOO	74841	TKG5312-2	STOP LIGHT-TAILLIGH (LEFT)	1
20	PBOOO	74841	TKG5312-3	LIGHT ASSEMBLY,CLEA (RIGHT)	1
21	PAOZZ	13226	75A	.CONTACT ASSEMBLY, EL	2
22	PAOZZ	13226	72	.PACKING,PREFORMED	1
23	PAOZZ	08108	1157A	.LAMP,INCANDESCENT	1
24	MOOZZ	74841	STK14377-3	.WIRE,14 GAUGE (1.5 FT LG) MAKE FROM PN M22759/14-14-4	1
25	PAOZZ	13226	76	.GROMMET,NONMETALLIC	1
26	PAOZZ	13226	M70-C2-C365	.LIGHT,MARKER,CLEARA	1
27	MOOZZ	74841	STK14372-5	.WIRE,14 GAUGE (1.5 FT (G) MAKE FROM PN M22759/14-14-8	1
28	PAOZZ	96906	MS35489-97	.GROMMET,NONMETALLIC	1
29	PAOZZ	13226	71R	LENS,LIGHT (RED)	4
30	PAOZZ	13226	79	GASKET	4
31	PBOOO	74841	TKG5312-1	STOP LIGHT-TAILLIGH (LEFT)	2
32	PAOZZ	96906	MS35489-97	.GROMMET,NONMETALLIC	1
33	PAOZZ	13226	M70-02-0365	.LIGHT,MARKER,CLEARA	1
34	PAOZZ	13226	76	.GROMMET,NONMETALLIC	1
35	MOOZZ	74841	STK14373-2	.WIRE ,14 GAUGE (6.0 INCH) MAKE FROM M22759/14-14-1	1
36	PAOZZ	13226	75A	.CONTACT ASSEMBLY,EL	2
37	PAOZZ	08108	1157A	. LAMP,INCANDESCENT	1
38	PAOZZ	13226	72	.PACKING,PREFORMED	1
39	MOOZZ	74841	STK14375-1	.WIRE,14 GAUGE (6.0 INCH) MAKE FROM M22759/14-14-2	1

END OF FIGURE

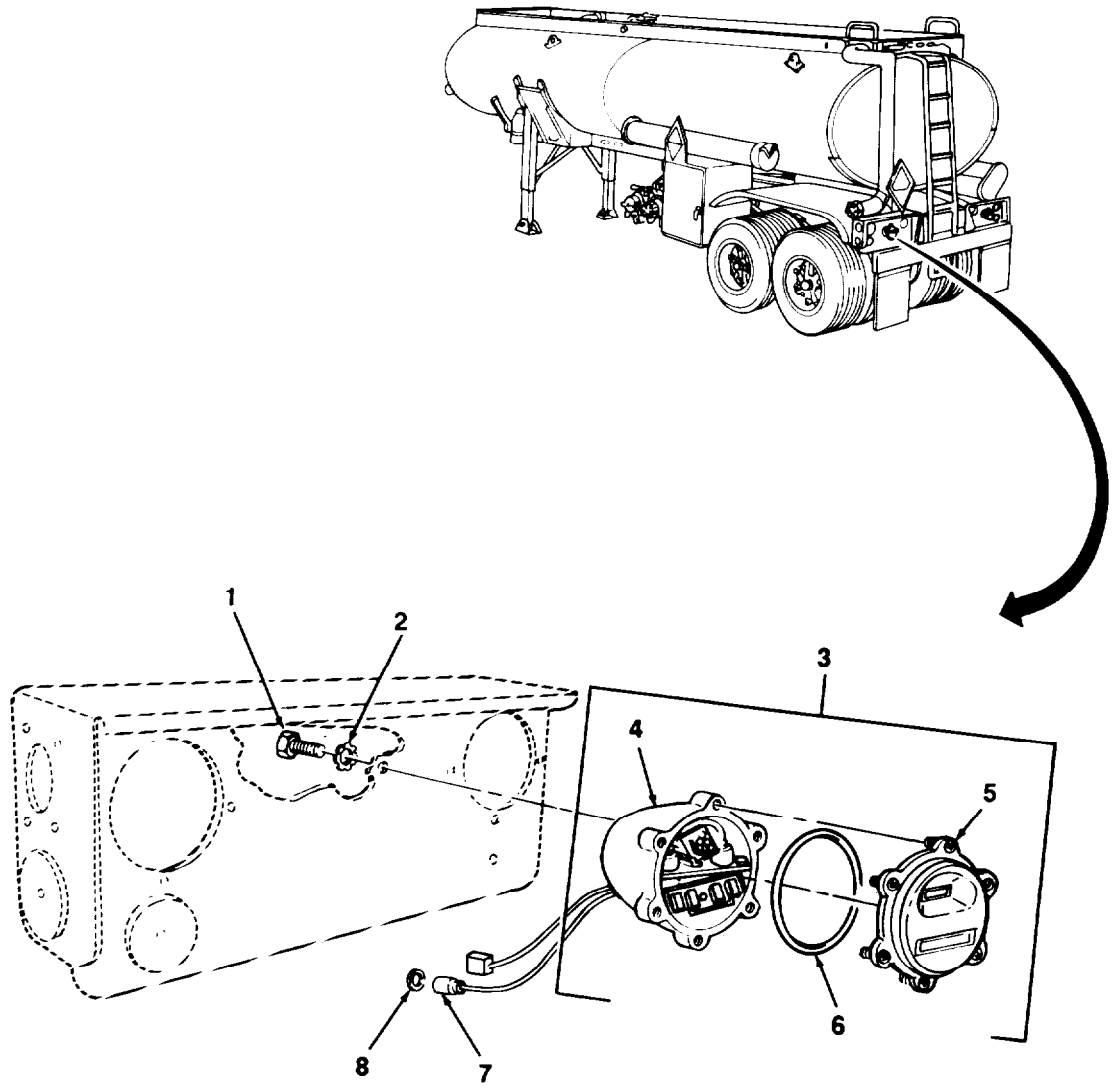


Figure 5. Rear *Stop* and *Blackout Light Assembly.*

(1) ITEM NO	(2) SHR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP: 0609 LIGHTS	
				FIG. 5 REAR STOP AND BLACKOUT LIGHT ASSEMBLY	
1	PAOZZ	74841	ZKA7799	BOLT,EXTERNALLY REL	4
2	PAOZZ	96906	MS16213-63	WASHER ,LOCK	4
3	PAOOO	96906	MS51330-1	STOP LIGHT-TAILLIGH	2
4	XAOZZ	96906	MS53047-1	.LIGHT,PARKING	1
5	PAOZZ	19207	7526018	.RETAINER,LENS	1
6	PAOZZ	19207	8694464	.GASKET	1
7	PAOZZ	19207	8338566	SHELL,ELECTRICAL CC	4
8	PAOZZ	19207	8338567	WASHER,SLOTTED	4
				END OF FIGURE	

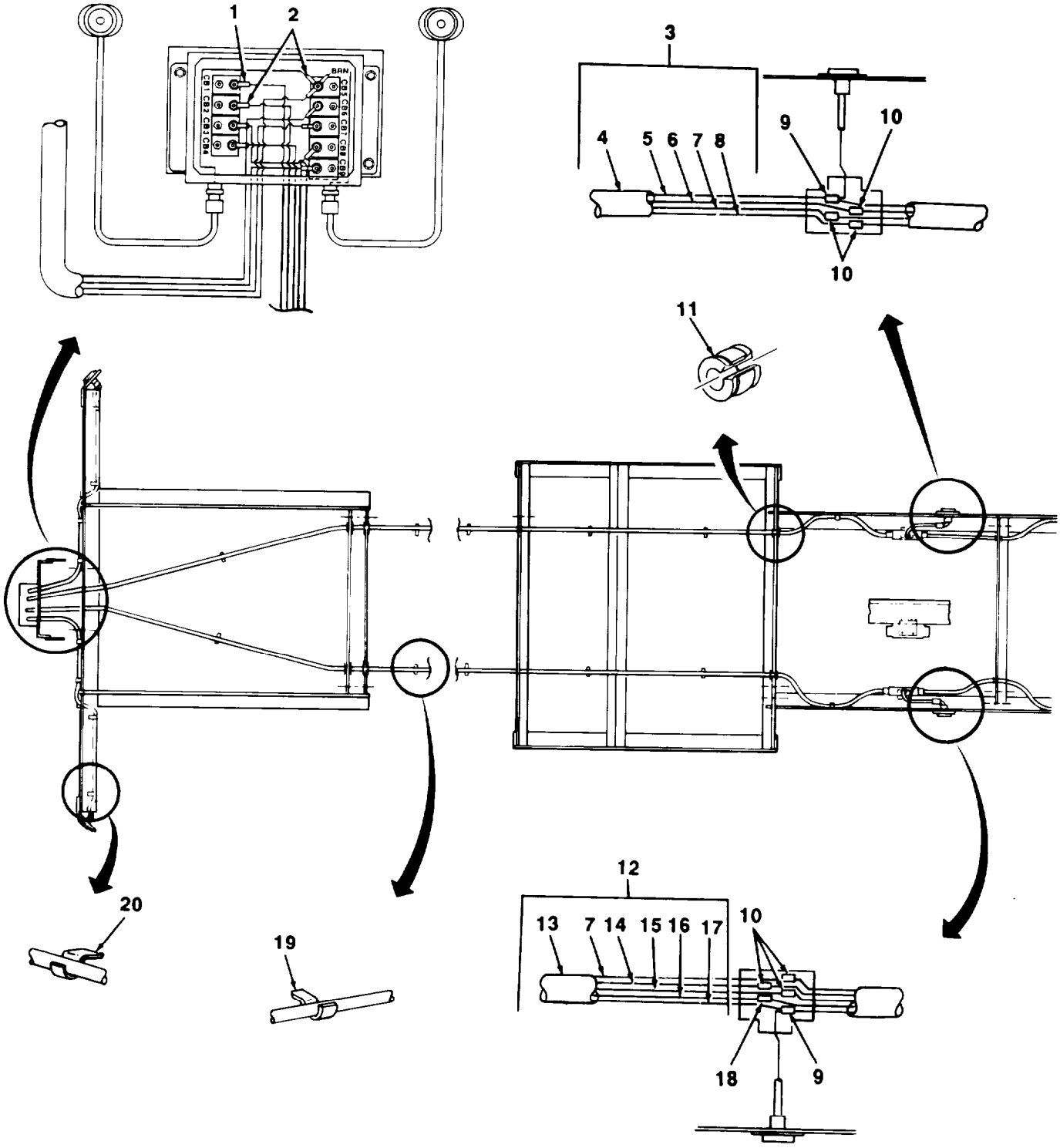


Figure 6. Front Half of Chassis Wiring and Related *Parts.*

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 0613 HULL OR CHASSIS WIRING HARNESS	
				FIG. 6 FRONT HALF OF CHASSIS WIRING AND RELATED PARTS	
1	PAOZZ	96906	MS25036-108	TERMINAL,LUG	7
2	PAOZZ	96906	MS25036-112	TERMINAL,LUG	2
3	AOOOO	74841	TKG5309-1	CONCUIT ASSY ,ELEC	1
4	MOOZZ	74841	LKA3334-5	.TUBING (17.58FT.LG.) MAKE FROM LS3967	1
5	MOOZZ	74841	STK14373-5	,WIPE ,14 GAUGE (18.58FT.LG.)MAKE FROM P/N M22759-14-14-1	1
6	MOOZZ	74841	STK14374-3	.WIPE,14 GAUGE (18.58 FT.LG.)MAKE FROM P/N M22759/14-14-5	1
7	MOOZZ	74841	TKG5320-1-4	.WIPE,14 GAUGE (18.58FT.LG.)MAKE FROM P/N GPT 14 AWG. COLOR GRAY.	1
8	MOOZZ	74841	STK14375-4	,WIPE,14 GAUGE (18,58FT,LG.)MAKE FROM F/N M22759/14-14-2	1
9	PAOZZ	00779	327638	SPLICE,CONDUCTOR	2
10	XDOZZ	14726	B40718	CONNECTOR,PLUG,ELEC	5
11	PAOZZ	14109	FSP11-1-4	GROMMET,NONMETALLIC	12
12	AOOOO	74841	TKG5309-2	CONDUIT ASSY,ELEC	1
13	MOOZZ	74841	LKA3334-1	.TUBING (17.5FT LG.)MAKE FROM P/N LS3967	1
14	MOOZZ	74041	STK14377-1	.WIPE ,14 GAUGE (18.5FT.LG.)MAKE FROM P/N M22759/14-14-4	1
15	MOOZZ	74841	LKA9655-1	.WIRE,14 GAUGE (18.5FT .LG.)MAKE FROM P/N GPT 14 AWG,COLORORANGE	1
16	MOOZZ	74841	TKG1336-6-1	.WIPE,12 GAUGE (I8.5FT.LG.)MAKE FROM P/N GPT 12 AWG COLORBLUE	1
17	MOOZZ	74841	STK14372-1	.WIPE,14 GAUGE (18.5FT.LG.)MAKE FROM P/N M22759/14-14-E	1
18	PAOZZ	14726	B4052B	SPLICE,CONDUCTOR	1
19	PFFZZ	74841	TKG0149-6	STRAP,RETAINING	14
20	PFFZZ	74841	TKG0149-4	STRAP,RETAINING	15
				END OF FIGURE	

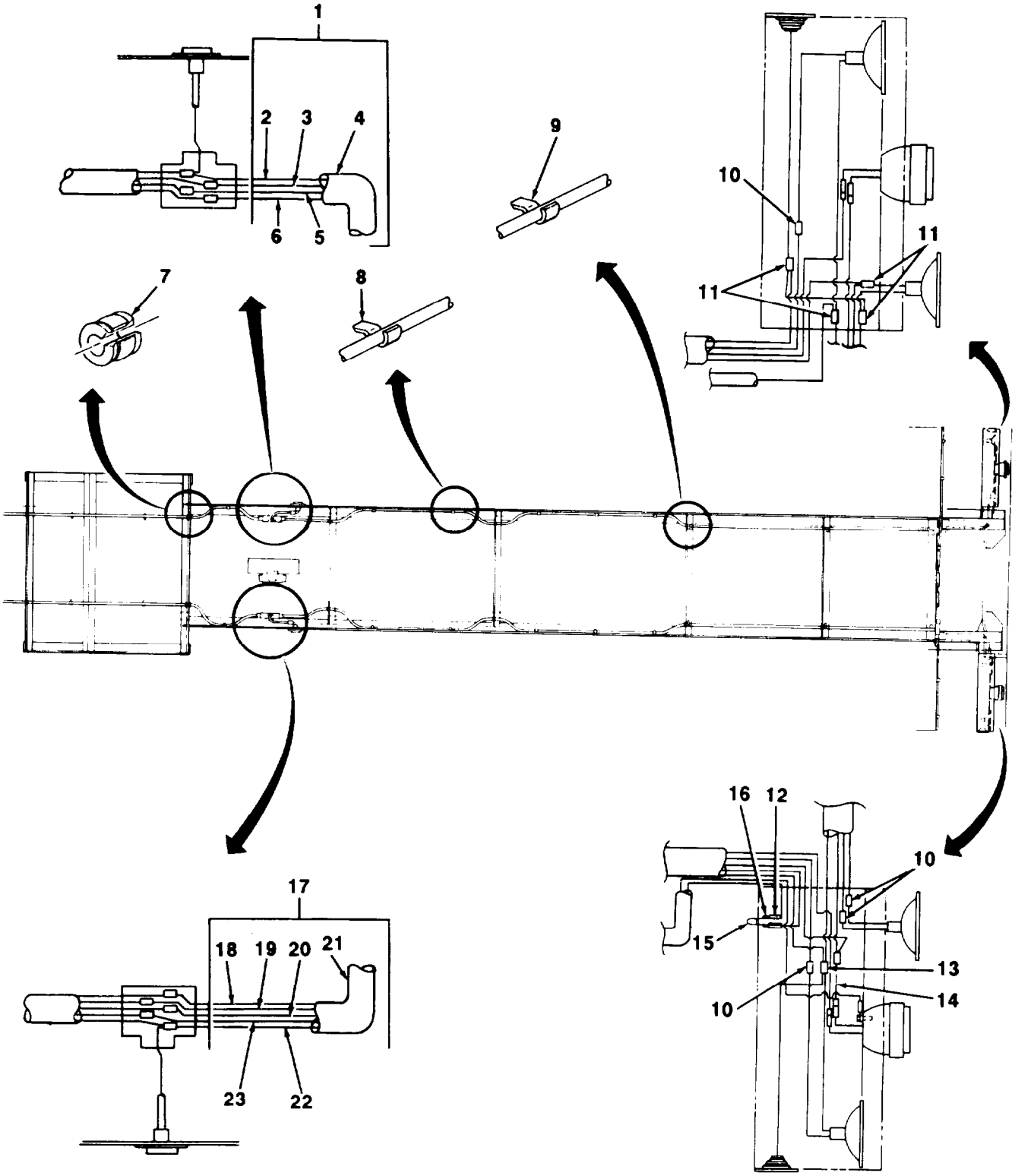


Figure 7. Rear Half of Chassis Wiring and Related Parts.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP: 0613 HULL CR CHASSIS WIRING HARNESS	
				FIG. 7 REAR HALF OF CHASSIS WIRING AND RELATED PARTS	
1	AOOOO	74841	TKG5309-3	CONDUIT ASSY ,ELEC 1	1
2	MOOZZ	74841	STK14373-4	.WIRE,14 GAUGE (19.33FT.LG.)MAKE FROM P/N M22759/14-14-1	1
3	MOOZZ	74841	STK14374-2	.WIPE,14 GAUGE (19.33FT.LG.)MAKE FROM P/N M22759/14-14-5	1
4	MOOZZ	74841	LKA3334-4	.TUBING (18.33FT.LG.)MAKE FROM P/N LS3967	1
5	MOOZZ	74841	TKG5320-1-3	.WIPE,14 GAUGE (20.08FT.LG.)MAKE FROM P/N GPT 14 AWG, COLOR GRAY	1
6	MOOZZ	74841	STK14375-3	.WIRE,14 GAUGE (19.33FT.LG.)MAKE FROM P/N M22759/14-14-2	1
7	PAOZZ	14109	FSP11-1-4	GROMMET,NONMETALLIC	4
8	PFFZZ	74841	TKG0149-6	STRAP ,RETAINING	18
9	PFFZZ	74841	TKG0149-5	OKRAP,RETAINING	4
10	PAOZZ	98410	B231	SPLICE,CONDUCTOR	4
11	PAOZZ	00779	327638	SPLICE,CONDUCTOR	6
12	PAOZZ	96906	MS25036-112	TERMINAL,LUG	1
13	PAOZZ	14726	B4052B	SPLICE,CONDUCTOR	1
14	PAOZZ	74841	TKG5317-2	LEAD,ELECTRICAL	1
15	PAOZZ	13445	81264	BOOT,DUST AND MOIST	1
16	PAOZZ	13445	5558	SWITCH,TOGGLE	1
17	AOOOO	74841	TKG5309-4	CONDUIT ASSY,ELEC	1
18	MOOZZ	74841	TKC5320-1-5	.WIPE, 14 GAUGE (20,08 FT. LG) MAKE FROM P/N 81147S	1
19	MOOZZ	74841	STK14377-2	.WIRE,14 GAUGE (19.33FT.LG.)MAKE FROM P/N M22759/14-14-4	1
20	MOOZZ	74841	LKA9655-2	.WIRE,14 GAUGE (19.33FT.LG.)MAKE FROM P/N GPT 14 AWG,COLOR ORANGE	1
21	MOOZZ	74841	LKA3334-2	.TUBING (18.33FT.LG.)MAKE FROM P/N LS3967	1
22	MOOZZ	74841	STK14372-2	,WIRE,14 GAUGE (19.33FT.LG.)MAKE FROM P/N M22759/14-14-8	1
23	MOOZZ	74841	TKG1336-6-2	.WIRE,12 GAUGE (19.33FT.LG.)MAKE FROM P/N GPT 12 AWG,COLOR BLUE	1
				END OF FIGURE	

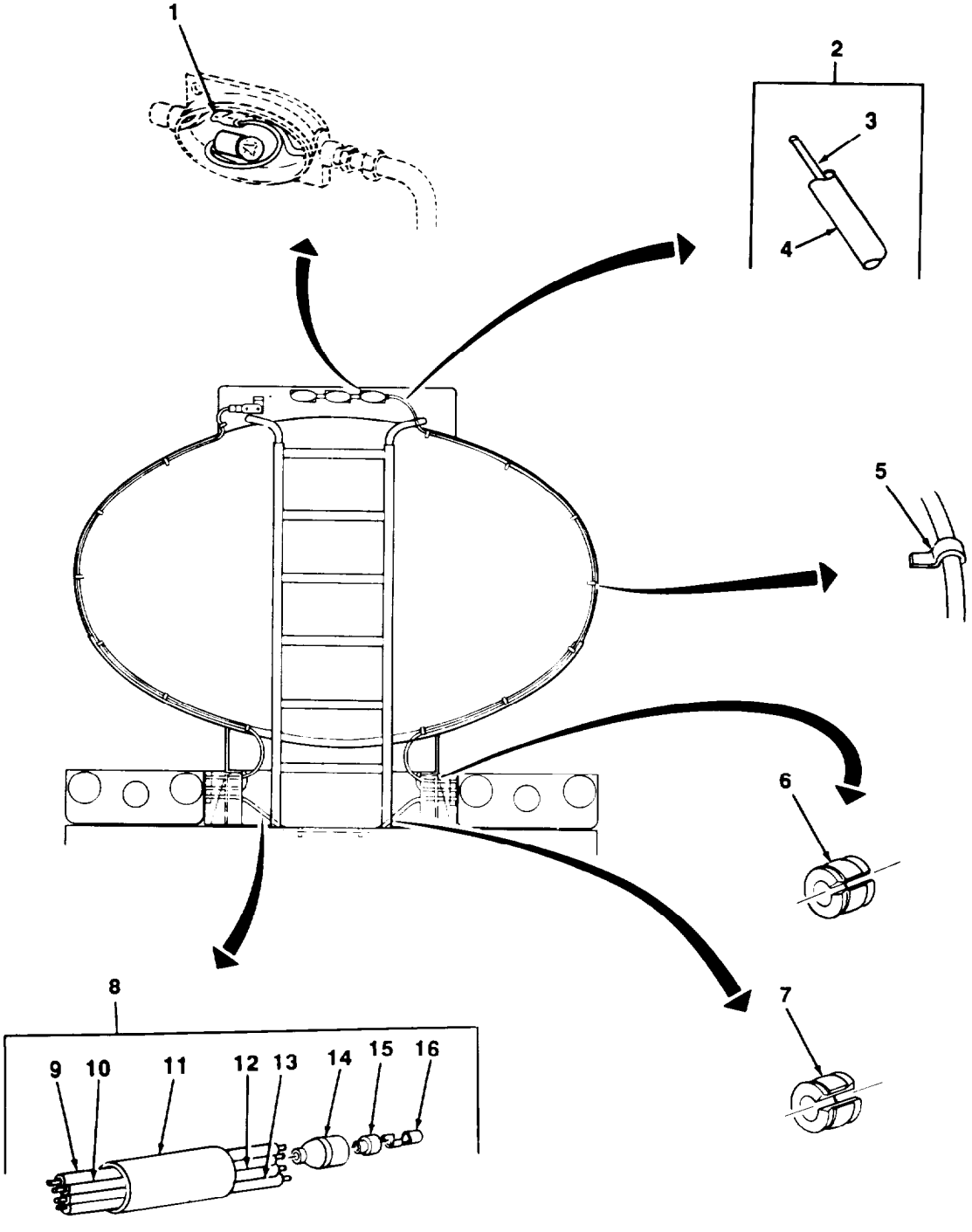


Figure 8. Back Rear Chassis Wiring and Related Parts.

(1) ITEM NO	(2) SMA CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 0613 HULL OR CHASSIS WIRING	
				FIG. 8 BACK REAR CHASSIS MIRING AND RELATED PARTS	
1	PAOZZ	00779	327638	SPLICE,CONDUCTOR	1
2	AOOOO	74841	TKG5314-1	CONDUIT ASSY ,ELEC	1
3	MOOZZ	74841	STK14372-7	.WIPE,14 GAUGE (12.08FT.LG.)MAKE FROM P/N M22759/14-14-8	1
4	MOOZZ	74841	LKA3332-2	.TUBING (11.08FT.LG.)MAKE FROM P/N 8588	1
5	PFFZZ	74841	TKG0149-4	STRAP,RETAINING	7
6	PAOZZ	23705	FSP11-1-3	GROMMET,NONMETTALLIC	2
7	PAOZZ	14109	FSP11-1-4	GROMMET,NONMETALLIC	4
8	AOOOO	74841	TKG5315-1	CONDUIT ASSY ,ELEC	1
9	MOOZZ	74841	STK14372-8	.WIRE,14 GAUGE (5.33FT.LG.)MAKE FROM P/N M22759/14-14-8	1
10	MOOZZ	74841	LKA9655-3	.WIRE,14 GAUGE (6.0FT.LG.)MAKE FROM P/N GPT 14 AWG,COLOR ORANGE	1
11	MOOZZ	74841	LKA3334-3	.TUBING (4.33 FT.LG.) CAKE FROM LS3967	1
12	MOOZZ	74841	STK14375-2	.WIRE,14 GAUGE (5.33FT.LG.)MAKE FROM P/N M22759/14-14-2	1
13	MOOZZ	74841	STK14373-3	.WIRE,14 GAUGE (5.33FT.LG.)MAKE FROM P/N M22759/14-14-1	1
14	PAOZZ	19207	8338561	.SHELL,ELECTRICAL CC	1
15	PAOZZ	19207	8338562	.INSULATOR,BUSHING	1
14	PAOZZ	19207	8330564	.TERMINAL ASSEMBLY	1
				END OF FIGURE	

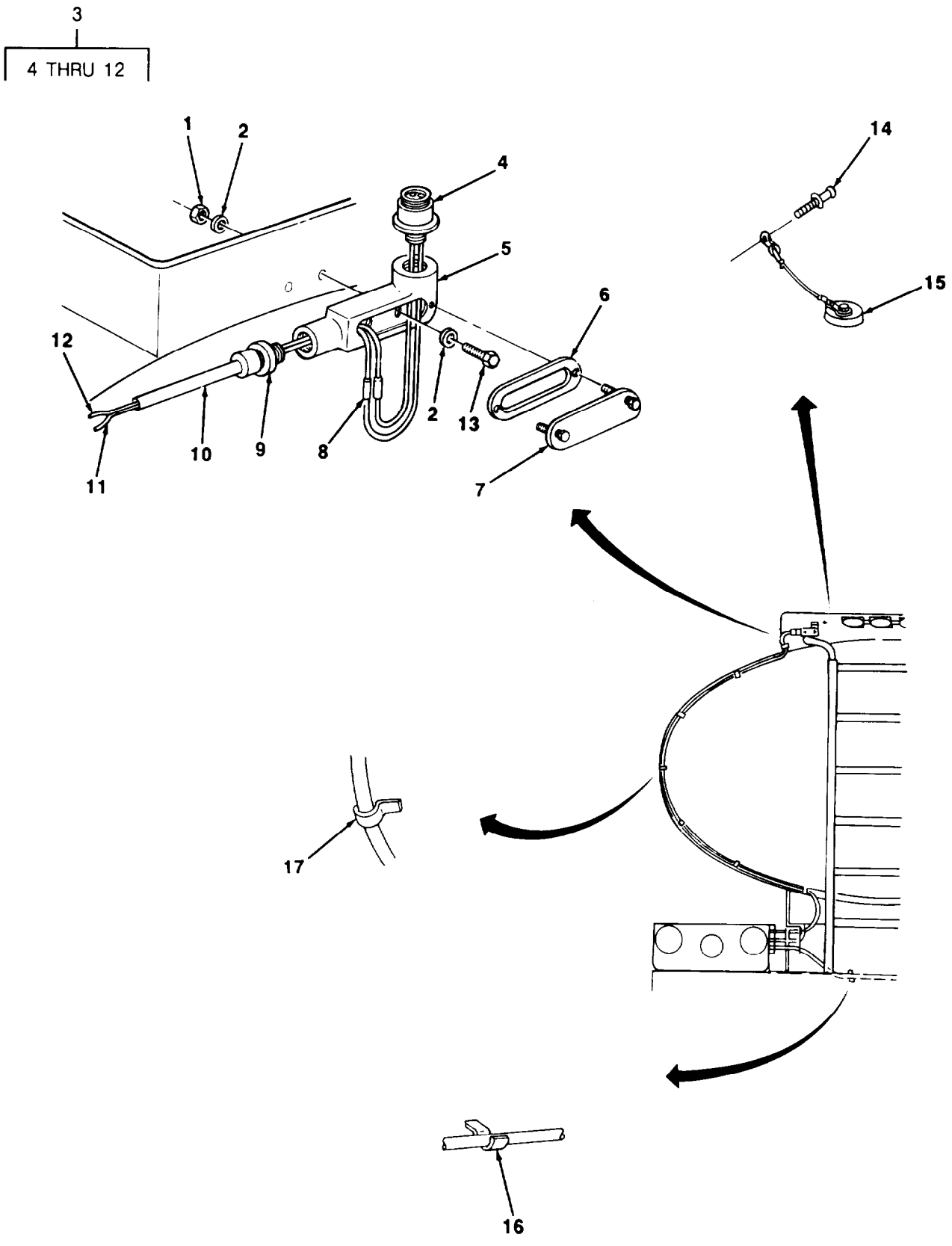


Figure 9. Component Parts for Convoy Warning Conduit Assembly.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 0613 HULL OR CHASSIS WIRING HARNESS	
				FIG. 9 COMPONENT PARTS FOR CONVOY WARNING CONDUIT ASSEMBLY	
1	PAOZZ	96906	MS51943-31	NUT ,SELF-LOCKING.HE	2
2	PAOZZ	14109	FSP7-2-1	WASHER	4
3	A0000	74841	TKG5529-1	CONDUIT ASSY,CWL	1
4	PAOZZ	79409	40701	.RECEPTACLE	1
5	PAOZZ	74841	TKG5489-1	.CONDULET	1
6	PAOZZ	74841	TKG5499-1	.GASKET,CONDULET	1
7	PAOZZ	74841	TKG5501-1	.COVER,CONDULET	1
8	PAOZZ	26132	B40448F	.CONNECTOR,BUTT	2
9	PAOZZ	93061	N6MC8	.ADAPTER,STRAIGHT,PI	1
10	MOOZZ	74841	LKA3332-3	.TUBING (11 FT. 1 IN. LG.) MAKE FROM P/N 8588	1
11	MOOZZ	74841	STK143737	.WIPE,14GA.BROWN (13.083FT.LG.)MAKE FROM P/N C14EBR	1
12	MOOZZ	74841	STK14376-1	.WIRE,14GA,BLUE (12.083FT.LG.)MAKE FROM P/N TYPE GPT 14 AWG BLUE	1
13	PAOZZ	96906	MS90728-8	SCREW,CAP,HEXAGON H	2
14	PAOZZ	96906	MS20600B4W7	RIVET,BLIND	1
15	PAOZZ	79409	65-0085	CAP,PROTECTION	1
16	PFFZZ	74841	TKG0149-5	STRAP,RETAINING	2
17	PFFZZ	74841	TKG0149-4	STRAP,RETAINING	7

END OF FIGURE

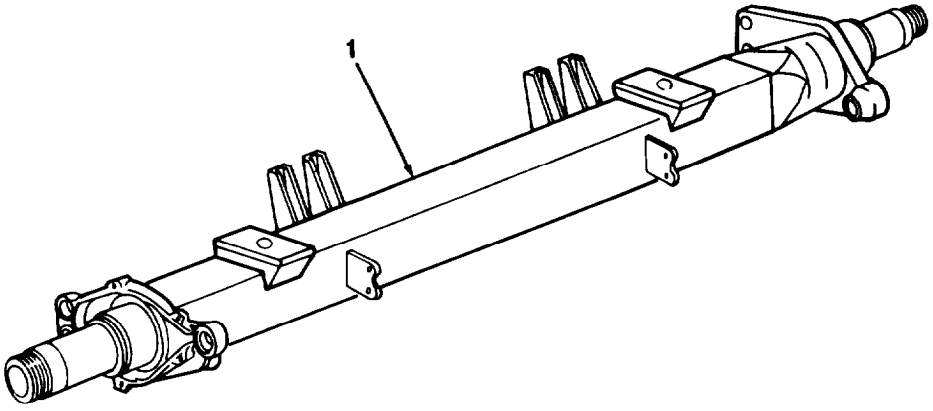


Figure 10. Axle Tube Assembly.

(1) ITEM NO	(2) SWR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 11 REAR AXLE	
				GROUP: 1101 HOUSING, BEAM, HOUSING COVERS, PLUGS, SEALS, ETC.	
				FIG. 10 AXLE TUBE ASSEMBLY	
1	PBFZZ	74841	A-CE6277-3	AXLE,VEHICULAR,NOND	2
				END OF FIGURE	

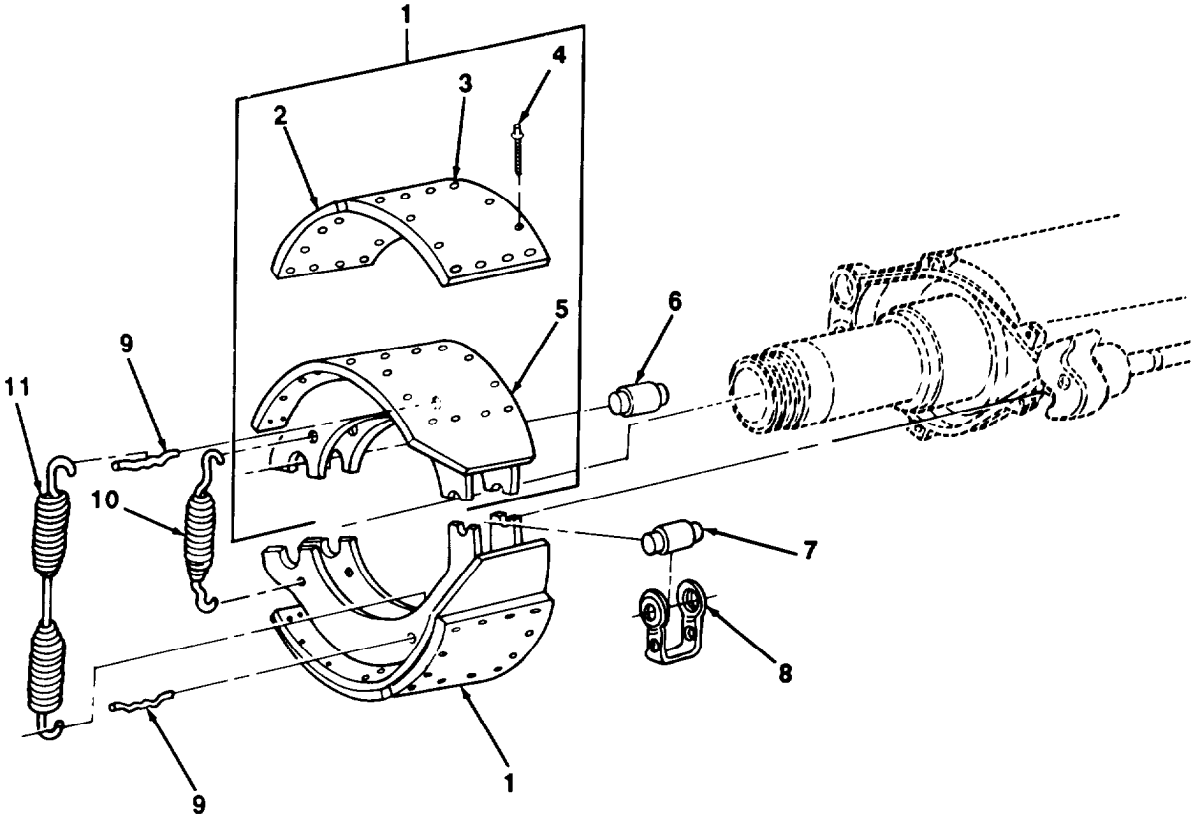


Figure 11. Brakeshoe and *lining Assembly and Mounting Hardware.*

(1) ITEM NO	(2) SHR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES	(6) (UOC) QTY
				GROUP: 12 BRAKES	
				GROUP: 1202 SERVICE BRAKES	
				FIG. 11 BRAKESHOE AND LINING ASSEMBLY AND MOUNTING HARDWARE	
1	PAOFF	74841	A-CF4854-1	BRAKE SHOE	4
2	PA FZZ	74841	A-CF4858-1	.LINING,FRICTION	1
3	PAFZZ	74841	A-CF4857-1	.LINING,FRICTION	1
4	PAFZZ	23705	541801	.RIVET,TUBULAR	24
5	XAFZZ	74841	A-CF3379-1	.SHOE	1
6	PAOZZ	74841	A-CF3378-1	PIN, SHOULDER,HEADLE	4
7	PAOZZ	23705	330733	ROLLER	4
8	PAOZZ	74841	A-CF1328-1	RETAINER,SPECIAL	8
9	PAOZZ	74841	583015	CLIP,RETAINING	8
10	PAOZZ	74841	A-CF3079-1	SPRING,HELICAL,EXTE	8
11	PAOZZ	14109	A-CE9911-1	SPRING,RETURN	4

END OF FIGURE

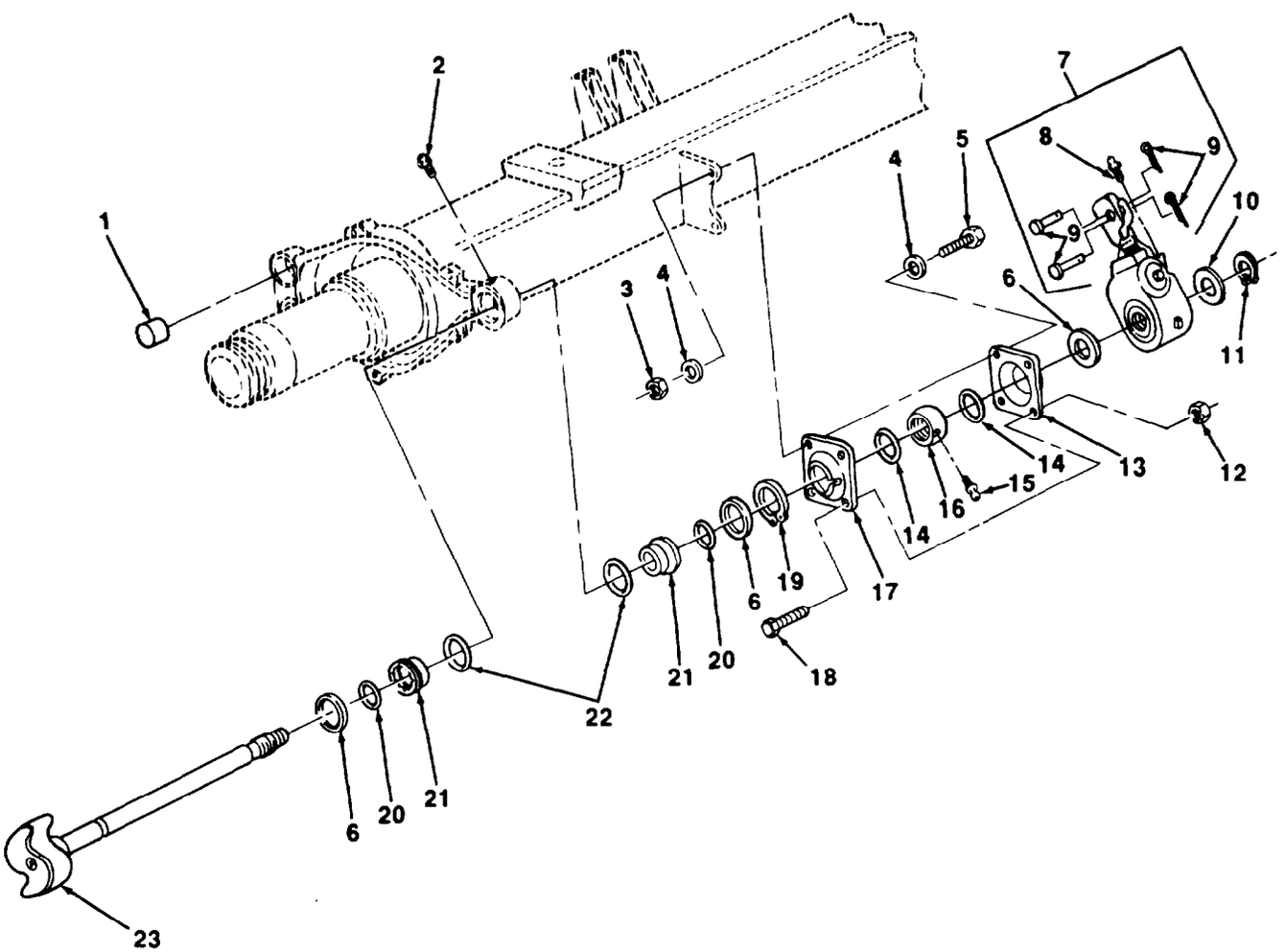


Figure 12. Slack Adjuster, Camshaft, and Related Hardware.

(1) ITEM ND	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 1206 MECHANICAL BRAKE SYSTEM	
				FIG. 12 SLACK ADJUSTER, CAMSHAFT, AND RELATED HARDWARE	
1	PAOZZ	74841	A-XA0068-1	BUSHING, SLEEVE	8
2	XDOZZ	14109	FSP12-2-4	FITTING,LUBRICATION	4
3	PAOZZ	96906	MS51522-17	NUT,SELF-LOCKING,HE	8
4	PAOZZ	96906	MS27183-14	WASHER,FLAT	16
5	PAOZZ	14109	FSP5-5-20-	SCREW,CAP,HEXAGON H	8
4	PAOZZ	74841	A-XA0417-1	WASHER,CAM	12
7	PAOOO	74841	A-CF4205-1	ADJUSTER,SLACK,BRAK	4
8	PAOZZ	96906	MS15001-1	.FITTING,LUBRICATION	1
9	PAOZZ	74841	TKG5517-1	.PARTS KIT, BPAKE ADJ	1
10	PAOZZ	74841	A-XA0432-1	WASHER,FLAT	4
11	PAOZZ	96906	MS16624-1050	RING,RETAINING	4
12	PAOZZ	96906	MS51943-33	NUT,SELF-LOCKING,HE	8
13	PAOZZ	74841	A-CF4021-1	COVER,ACCESS	4
14	PAOZZ	74841	A-XA0412-1	PACKING, PREFORMED	8
15	PAOZZ	96906	MS15002-1	FITTING, LUBRICATION	4
16	PAOZZ	14109	A-CD2285-1	BUSHING, CAMSHAFT	4
17	PAOZZ	74841	A-CF4022-1	BRACKET,MOUNTING	4
18	PAOZZ	96906	MS90728-32	BOLT,MACHINE	8
19	PAOZZ	96906	MS16624-1162	RING, RETAINING	4
20	PAOZZ	14109	AXA0415-1	PACKING, PREFORMED	8
21	PAOZZ	74841	A-XA0413-1	BEARING, SLEEVE	8
22	PAOZZ	14109	AXA0414-1	PACKING, PREFORMED	8
23	PAOZZ	74841	A-XA0420-1	CAMSHAFT,ACTUATING, LEFT HAND	2
23	PAOZZ	74841	A-XA0420-2	CAMSHAFT,ACTUATING, RIGHT HAND	2
				END OF FIGURE	

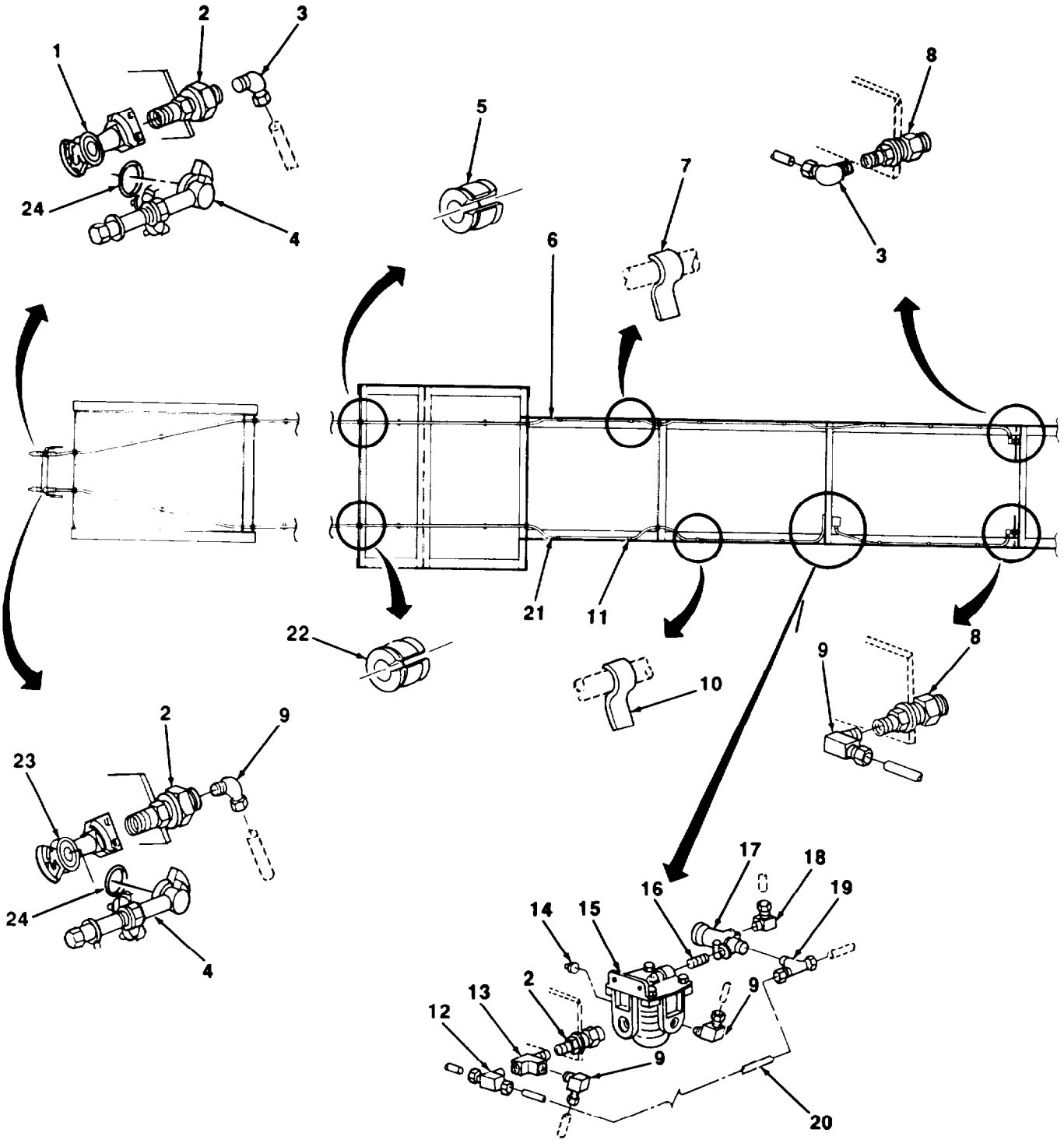


Figure 13. Front Half Air Supply Lines and Valve Relay.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODE (UOC)	(6) QTY
				GROUP: 1208 AIR BRAKE SYSTEM	
				FIG. 13 FRONT HALF AIR SUPPLY LINES AND VALVE RELAY	
1	PAOZZ	98343	10452S	COUPLING HALF,QUICK	1
2	PAOZZ	72914	11246	SHAFT ,SHOULDERED	2
3	PAOZZ	93061	269NTA-8-6	ELBOW,PIPE TO TUBE	2
4	PAOZZ	06853	212227	DUMMY COUPLING,AUTO	2
5	PAOZZ	14109	FSP11-1-4	GROMMET,NONMETALLIC	6
6	MOOZZ	74841	STK40109-2	TUBING,NYL (33.0 FT. LG.)MAKE FROM P/N STK40109	1
7	PFFZZ	74841	TKG0149-3	CLIP,SPRING TENSION	13
8	PAOZZ	93061	207ACBH-6	COUPLING,PIPE	2
9	PAOZZ	93061	269NTA-6-6	ELBOW, PIPE TO TUBE	4
10	PFFZZ	74841	TKG0149-4	STRAP,RETAINING	15
11	MOOZZ	74841	STK40090-9	TUBING,NYLON (7.9FT.LG)MAKE FROM P/N STK40090	1
12	PAOZZ	93061	272NTA-6-6	TEE,PIPE TO TUBE	1
13	PAOZZ	93061	2225P-6	TEE,PIPE	1
14	PAOZZ	14109	FSP12-1-1	PLUG,PIPE	1
15	PAOZZ	06721	AE-86313	VALVE,RELAY,AIR PRE	1
16	PAOZZ	14109	FSP12-17-1	NIPPLE,PIPE	1
17	PAOZZ	74841	VWA8862	VALVE,RELAY,AIR PRE	1
18	PAOZZ	81343	6-2 100202BA	ELBOW,PIPE TO TUBE	1
19	PAOZZ	81743	6-4 120202BA(LONG NUT	ELBOW, PIPE TO TUBE	1
20	MOOZZ	74841	STK40090-1	TUBING,NYLON (10IN.LG.) MAKE FROM P/N STK40090	1
21	MOOZZ	74841	STK40090-8	TUBING,NYL (27.3 FT. LG.)MAKE FROM P/N STK40090	1
22	PAOZZ	23705	FSP11-1-3	GROMMET,NONMETALLIC	5
23	PAOZZ	98743	10451E	COUPLING HALF,QUICK (EMERGENCY)	1
24	PAOZZ	6A120	1509	SEAL	2

END OF FIGURE

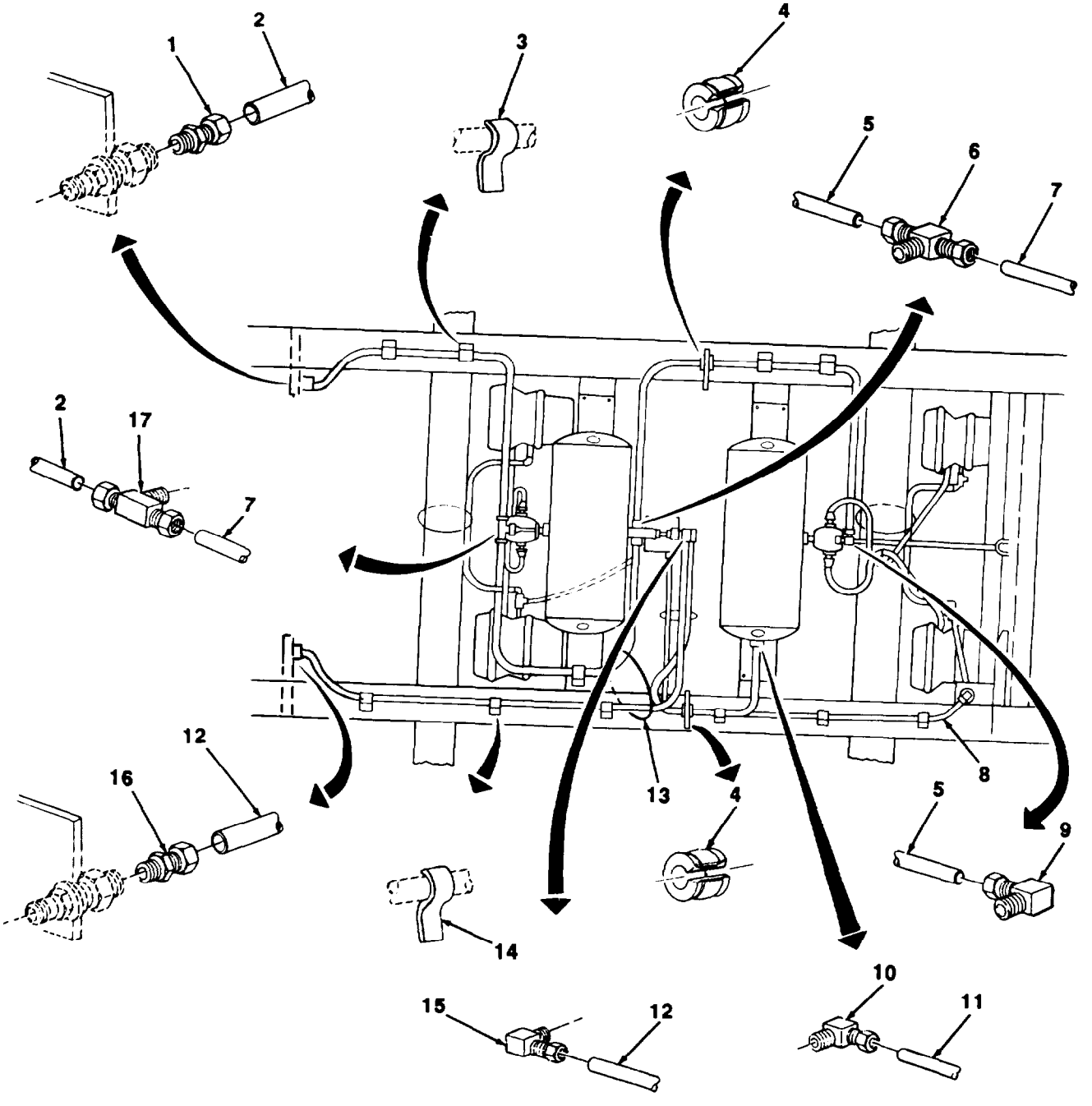


Figure 14. Rear Air Supply to Reservoir Assemblies.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 1208 AIR BRAKE SYSTEM	
				FIG, 14 REAR AIR SUPPLY TO RESERVOIR ASSEMBLIES	
1	PAOZZ	93061	68NTA-8-6	ADAPTER,STRAIGHT,PI	1
2	MOOZZ	74841	STK40109-1	TUBING,NYL (5.2 FT LG) MAKE FROM P/N STK40109	1
3	PFFZZ	74841	TKG0149-1	STRAP,RETAINING	4
4	PAOZZ	14109	FSP11-1-4	GROMMET,NONMETALLIC	2
5	MOOZZ	74841	STK40109-4	TUBING,NYLON (4.7 FT LG) MAKE FROM P/N STK40109	1
6	PAOZZ	93061	272NTA-8-6	TEE,PIPE TO TUBE	1
7	MOOZZ	74841	STK4010-3	TUBING,NYLON (3.6 FT (G) MAKE FROM P/N STK40109	1
8	MOOZZ	74841	STK40090-17	TUBING,NYLON (4.833FT.LG.)MAKE FROM P/N STK40090	1
9	PAOZZ	93061	269NTA-8-4	ELBOW,PIPE TO TUBE	1
10	PAOZZ	81343	6-8 100302BA	ELBOW,PIPE TO TUBE..	1
11	MOOZZ	74841	STK4009C-7	TUBING,NYL (3.0 FT LG) MAKE FROM P/N STK40090	1
12	MOOZZ	74841	STK4009C-10	TUBING, NYLON (5.0FT.LG.)MAKE FROM P/N STK40090	5
13	PAOZZ	96906	MS3367-6-9	STRAP,TIEDOWN, ELECT	2
14	PFFZZ	74841	TKG0149-2	STRAP ,RETAINING	6
15	PAOZZ	93061	26FNTA-6-6	ELBOW, PIPE TO TUBE	2
16	PAOZZ	93061	68NTA-6-6	ADAPTER. STRAIGHT, PI	1
17	PAOZZ	79470	1472X8X8X4	TEE, PIPE TO TUBE	1

END OF FIGURE

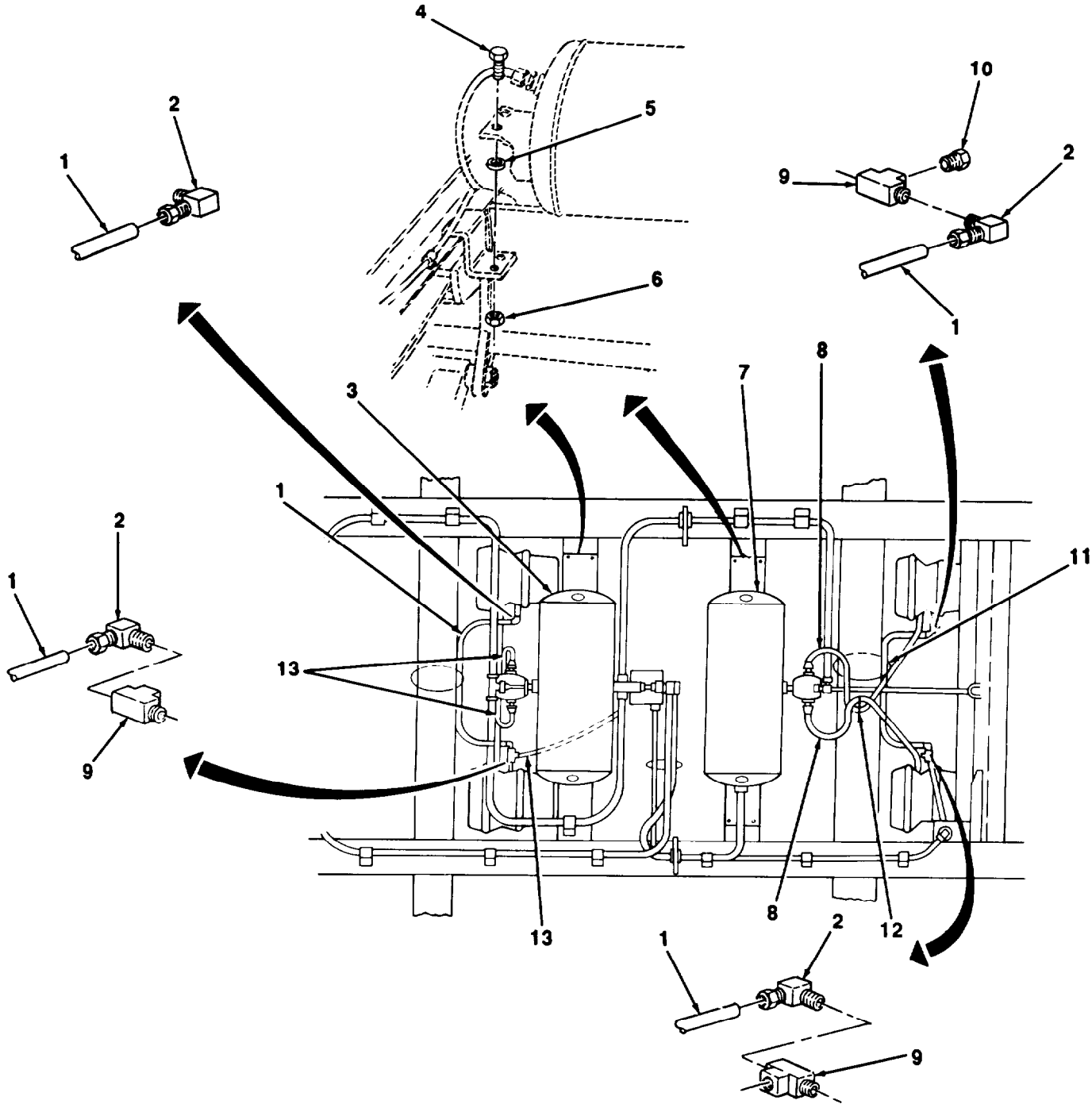


Figure 15. Air Supply lines from Reservoir to Chambers.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 1208 AIR BRAKE SYSTEM	
				FIG. 15 AIR SUPPLY LINES FROM RESERVOIR TO CHAMBERS	
1	MOOZZ	74841	STK40109-5	TUBING,NYLON (1.10FT .LG.)MAKE FROM P/N STK40109	2
2	PAOZZ	93061	269NTA-8-6	ELBOW,PIPE TO TUBE	4
3	PBOOO	74841	TKG5092-2	TANK, PRESSURE (FORWARD) FOR COMPONENT PARTS SEE FIG 16	1
4	PAOZZ	96906	MS90728-62	SCREW,CAP,HEXAGON H	8
5	PAOZZ	80064	2624732	WASHER, FLAT	8
6	PAOZZ	96906	MS51943-35	NUT,SELF-LOCKING,HE	8
7	PBOOO	74841	TKG5092-1	TANK,PRESSURE (REAR) FOR COMPONENT PARTS SEE FIG 16	1
8	PAOZZ	06721	62X 7454 BO	HOSE ASSEMBLY,NONME	2
9	PAOZZ	93061	2225P-6	TEE ,PIPE	3
10	PAOZZ	14109	FSP12-1-1	PLUG,PIPE	1
11	PAOZZ	09505	MS3367-6-1	STRAP,TIE DOWN	1
12	PAOZZ	74841	A-CE6477-1	SEPARATOR,HOSE	1
13	PAOZZ	06721	62X 7432 BO	HOSE, ASSEMBLY,NONME	3

END OF FIGURE

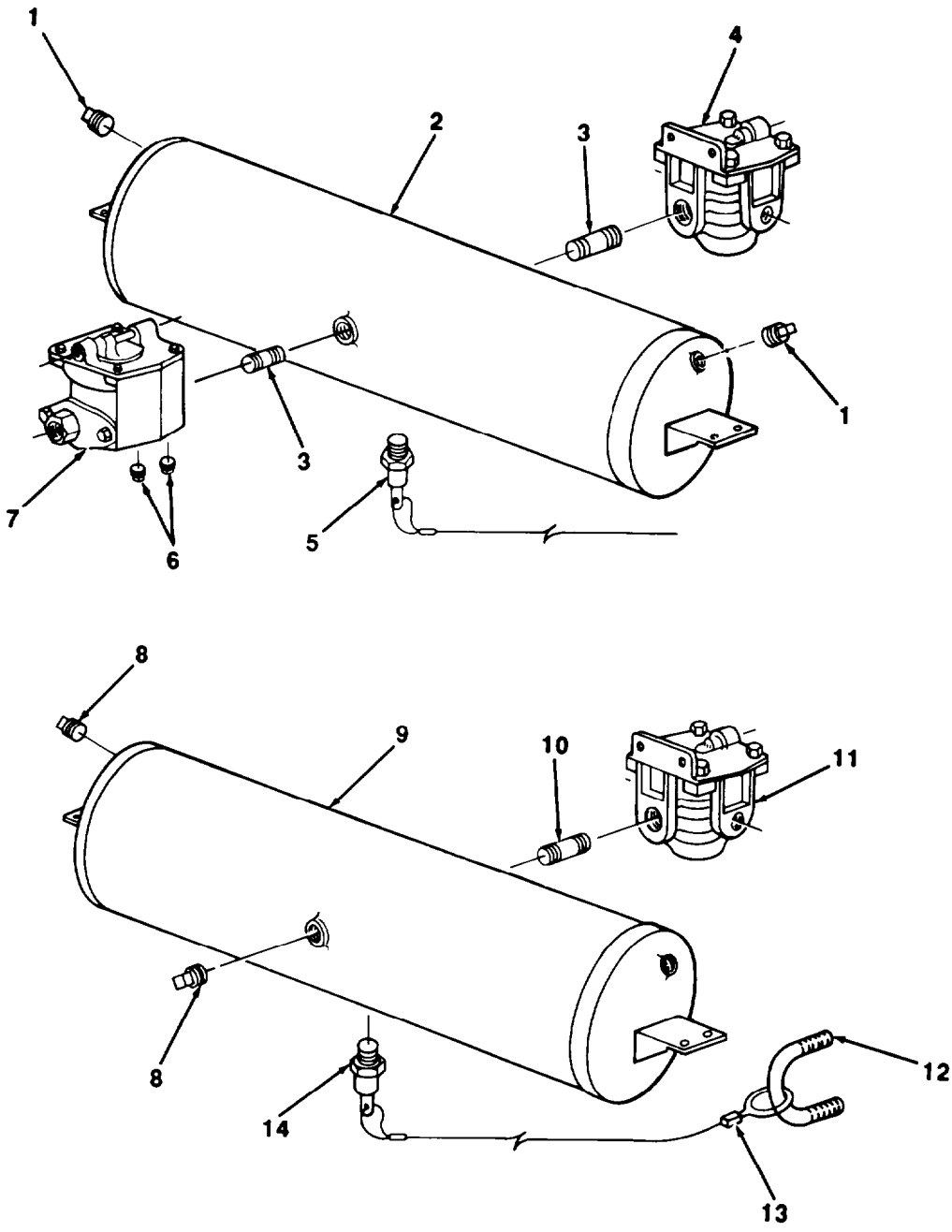


Figure 16. Component Parts for Forward and Rear Air Reservoirs.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1208 AIR BRAKE SYSTEM	
				FIG. 16 COMPONENT PARTS FOR FORWARD AND REAR AIR RESERVOIRS	
1	PAOZZ	29930	143981	PLUG, PIPE (FORWARD TANK)	2
2	PAOZZ	74841	A-CE5939-6	TANK, PRESSURE (FORWARD)	1
3	PAOZZ	19207	192075	NIPPLE, PIPE (FORWARD)	2
4	PAOZZ	06721	AE-86313	VALVE, RELAY, AIR PRE (FORWARD TANK).	1
5	PAOZZ	06721	121565-60	COCK, DRAIN (FORWARD)	1
6	PAOZZ	14109	FSP12-1-1	PLUG, PIPE FOR FORWARD RELAY VALVE)	2
7	PAOZZ	86721	N4302A	VALVE, RATIC RELAY	1
8	PAOZZ	29930	143981	PLUG, PIPE (REAR TANK)	2
9	PAOZZ	74841	A-CE5939-6	TANK, PRESSURE (REAR)	1
10	PAOZZ	19207	192075	NIPPLE, PIPE (REAR)	1
11	PAOZZ	06721	AE-86313	VALVE, RELAY, AIR PRE (REAR TANK)	1
12	PAOZZ	74841	VKA0351	BOLT, U (REAR TANK)	1
13	PAOZZ	C4898	VKA8994	CONCUIT, METAL, FLEX I (PEAR OR FORWARD TANK)	1
14	PAOZZ	06721	121565-60	COCK, DRAIN (REAR)	1
				END OF FIGURE	

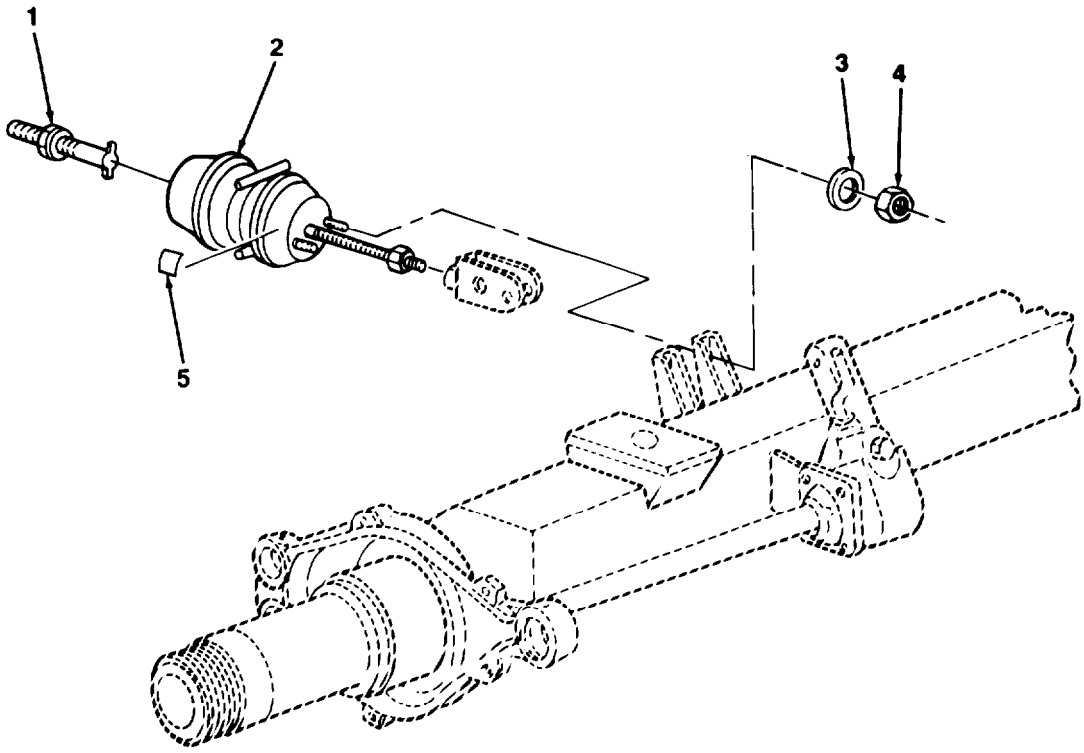


Figure 77. Chamber and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1208 AIR BRAKE SYSTEM	
				FIG. 17 CHAMBER AND RELATED HARDWARE	
1	PAOZZ	50153	11M011	STUD ASSEMBLY, RELEA	4
2	PAOZZ	74841	A-CF2662-EM4	CHAMBER, AIR BRAKE	4
3	PAOZZ	96906	MS27183-22	WASHER, FLAT	8
4	PAOZZ	96906	MS51922-49	NUT, SELF-LOCKING, HE	8
5	PAOZZ	74841	ALA10049	TAG, INSTRUCTION	4

END OF FIGURE

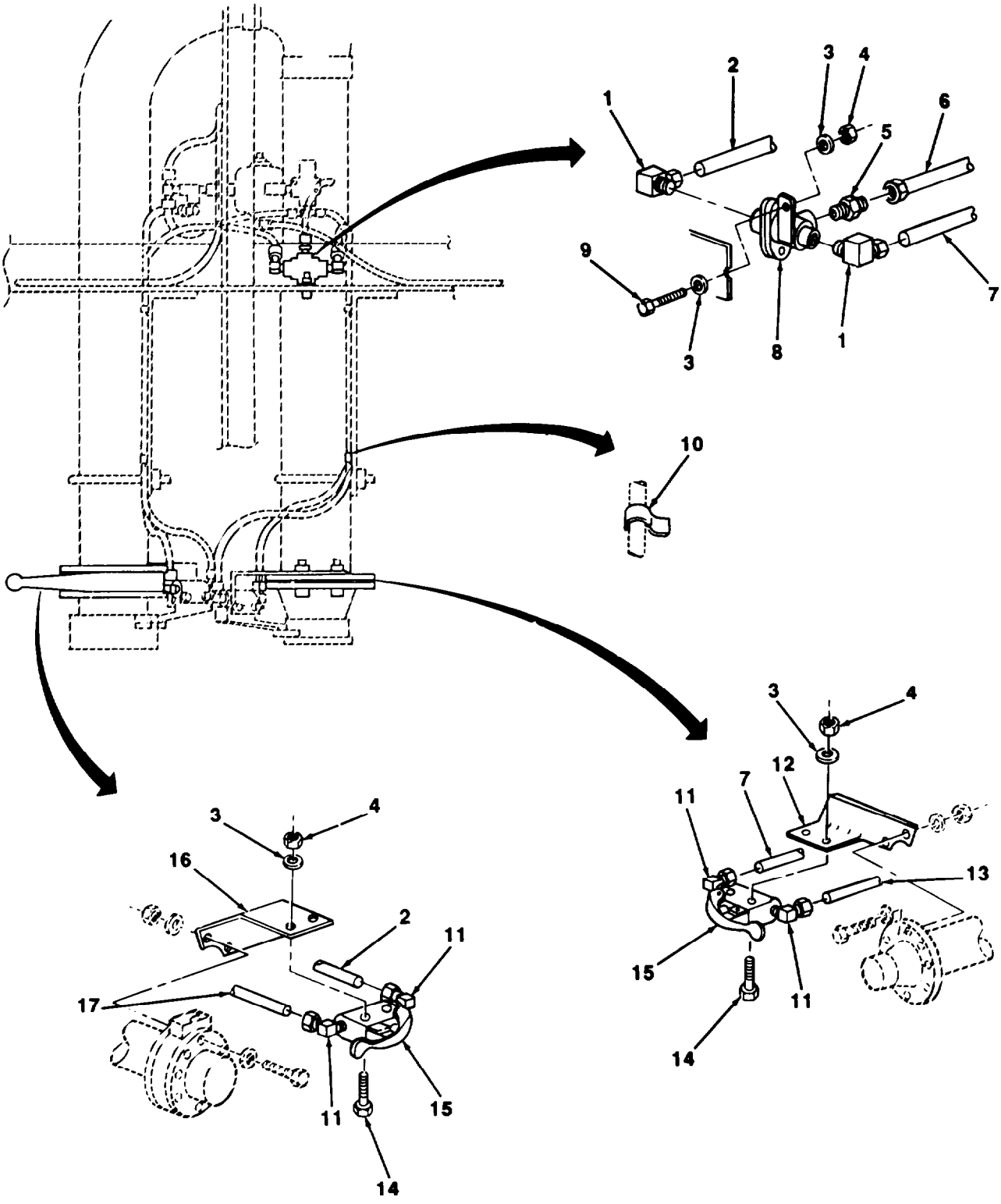


Figure 18. Brake Interlock Valves and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1208 AIR BRAKE SYSTEM	
				FIG. 18 BRAKE INTERLOCK VALVES AND RELATED HARDWARE	
1	PAOZZ	93061	269NTA-6-6	ELBOW,PIPE TO TUBE.....	2
2	MOOZZ	74841	STK4C09C-5	TUBING,NYLON (41IN.LG.) MAKE FROM P/N STK 40090.....	1
3	PAOZZ	96906	MS27183-1	WASHER,FLAT.....	6
4	PAOZZ	96906	MS51943-31	NUT,SELF-LOCKING,HE.....	4
5	PAOZZ	93061	68NTA-6-6	ADAPTER,STRAIGHT,PI.....	1
6	MOOZZ	74841	STK40090-2	TUBING,NYLON (11IN.LG.)MAKE FROM P/N STK40090.....	1
7	MOOZZ	74841	STK40090-4	TUBING,NYLON (38IN.LG.) MAKE FROM P/N STK 40090.....	1
8	PACZZ	06853	278614	VALVE,SHUTTLE.....	1
9	PAOZZ	96906	MS90728-10	SCREW,CAP,HEXAGON H.....	1
10	PFFZZ	74841	TKG0149-4	STRAP,RETAINING.....	8
11	PACZZ	93061	269NTA-6-4	ELBOW,PIPE TO TUBE.....	4
12	PAOZZ	74841	TKG5303-1	BRACKET,ANGLE.....	1
13	MOOZZ	74841	STK4C090-3	TUBING,NYLON (37IN.LG.) MAKE FROM P/N STK40090.....	1
14	PAOZZ	96906	MS90725-14	SCREW,CAP,HEXAGON H.....	4
15	PAOZZ	12623	B-1GF4-1/4IN	VALVE,GLOBE.....	2
16	PAOZZ	74841	TKG5302-1	BRACKET,ANGLE.....	1
17	MOOZZ	74841	STK40090-6	TUBING,NYLON (35IN.LG.) MAKE FROM P/N STK40090.....	1
				END OF FIGURE	

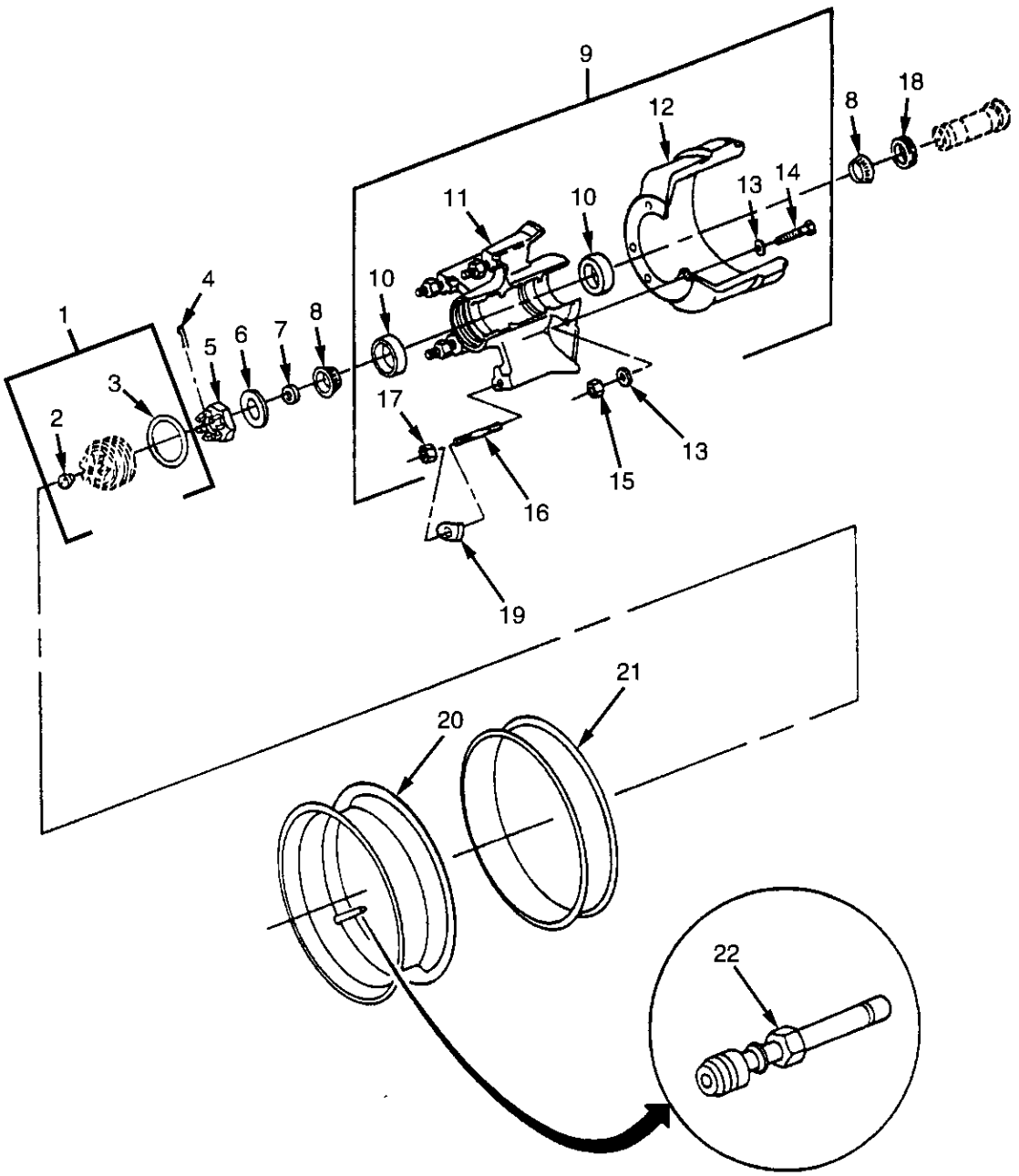


Figure 19. Wheel and Drum Assembly, Spacer, and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 13 WHEELS AND TRACKS	
					GROUP 1311 WHEEL ASSEMBLY	
					FIG. 19 WHEEL AND DRUM ASSEMBLY, SPACER, AND RELATED HARDWARE	
* 1	PBOZZ	2530013334715	14109	A-CC7538-900	PARTS KIT,HUB CAP.....	4
* 2	PAOZZ	4730011985438	14109	A-XA1005-1	.PLUG HUB.....	4
* 3	PAOZZ	5331012897845	74841	A-XA0484-1	.O-RING.....	4
4	PAOZZ	5315011987883	14109	A-XA0409-1	PIN,COTTER.....	4
5	PAOZZ	5310011991769	14109	A-CE8510-1	NUT.....	4
6	PAOZZ	5310012918881	74841	A-XA0408-1	WASHER,KEY.....	4
7	PAOZZ	5340011987885	14109	A-CD7180-1	PLUG,EXPANSION.....	4
8	PAOZZ	3110010069504	60038	HM518445	CONE AND ROLLERS,TA.....	4
9	AOOOO		74841	A-CE5245-1	WHEEL AND DRUM ASSY.....	4
* 10	PAOZZ	3110005419166	60038	HM518445HM518410	.BEARING,ROLLER,TAPE.....	2
11	PBOZZ	2530012909728	74841	A-CC5226-1	.WHEEL,PNEUMATIC TIR (20 INCH & 5 STUD).....	1
12	PBOFF	2530012856077	74841	A-CE6220-1	.BRAKE DRUM (16.5 X 7 INCH.).....	1
13	PAOZZ	5310012918883	74841	A-CD2813-1	.WASHER,FLAT.....	10
14	PAOZZ	5305012904867	14109	FSP5-5-11	.SCREW,CAP,HEXAGON H.....	5
15	PAOZZ	5310008329719	96906	MS51922-61	.NUT,SELF-LOCKING,HE.....	5
16	PAOZZ	5307012921483	74841	A-CE9950-1	.STUD,PLAIN.....	5
17	PAOZZ	5310009385543	23705	535885	.NUT,PLAIN,HEXAGON.....	5
18	PAOZZ	5330012897840	80201	533886	SEAL,PLAIN ENCASED.....	4
19	PAOZZ	5340012908673	74841	A-CE9120-1	CLAMP,SYNCHRO.....	20
20	PAOZZ	2530012905715	74841	A-CE8760-5	RIM,WHEEL,PNEUMATIC (22.5 X 8.25 INCH).....	8
21	PAOZZ	5365012897896	74841	A-CE8766-7	SPACER,RING.....	4
22	PAOZZ	2640012861712	74841	A-CE8769-2	VALVE,PNEUMATIC TIR.....	8
					END OF FIGURE	

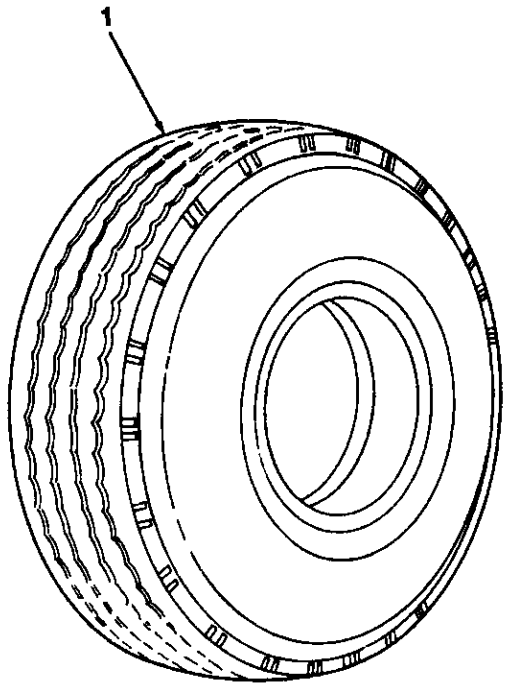


Figure 20. Tires.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 1313 TIRES, TUBES, TIRE CHAINS	
					FIG. 20 TIRES	
* 1	PCOFH	2610010453688	81348	GP3STYLXTYRACLR/ T/11.00R22.50/G/	TIRE,PNEUMATIC,VEHI.....	8
					END OF FIGURE	

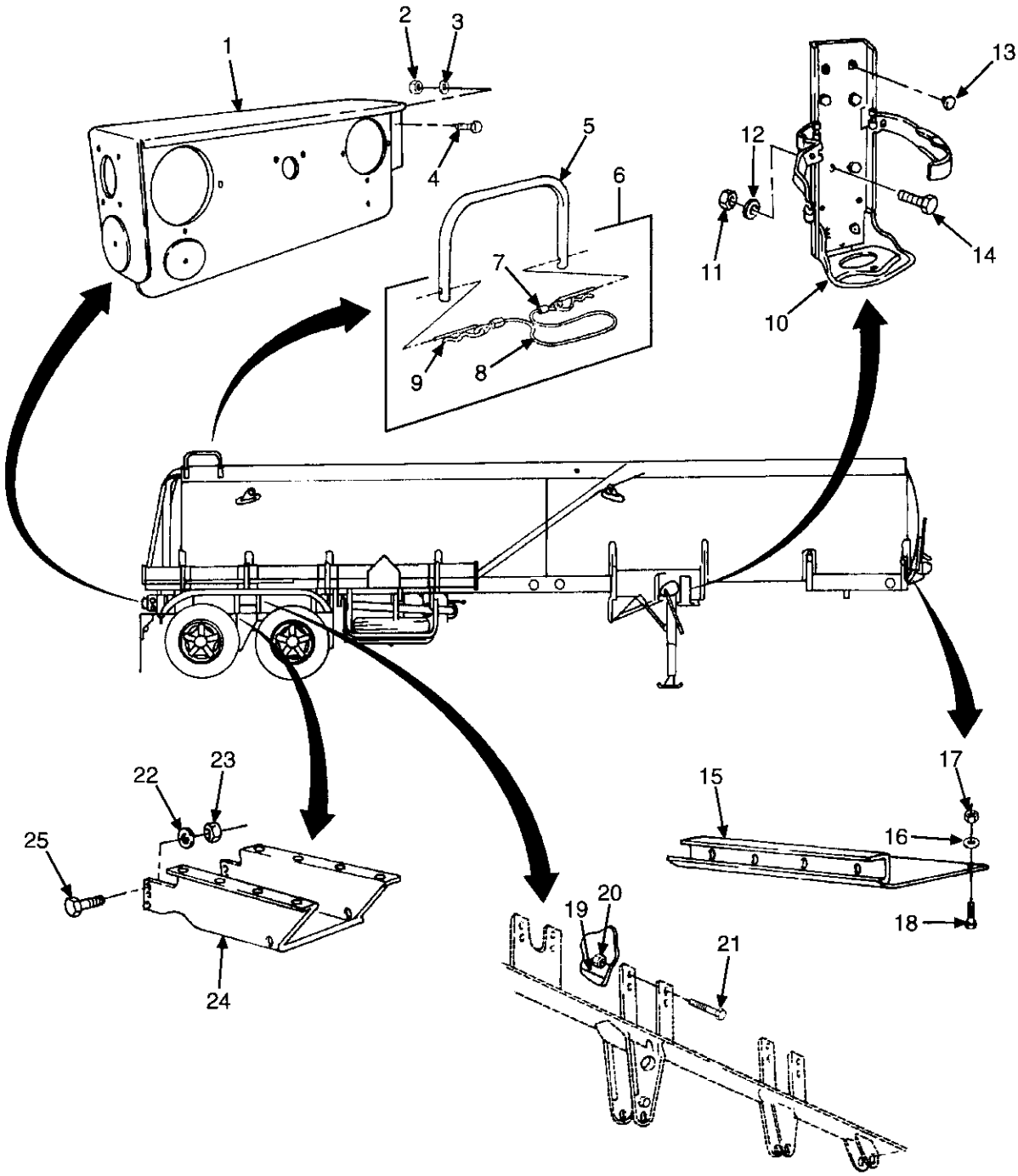


Figure 21. Grabhandles, Brackets, Pick-up Plate, Frame Assembly, and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP: 15 FRAME, TOWING ATTACHMENTS, DRAWBARS, AND ARTICULATION SYSTEMS	
					GROUP: 1501 FRAME ASSEMBLY	
					FIG. 21 GRABHANDLES, BRACKETS, PICK-UP PLATE, FRAME ASSEMBLY, AND RELATED HARDWARE	
* 1	PAOZZ	5340012988285	74841	TKG5265-1	BRACKET,MOUNTING ROADSIDE.....	1
* 1	PAOZZ	5340012988286	74841	TKG5265-2	BRACKET,MOUNTING CURBSIDE.....	1
* 2	PAOZZ	5310007680318	21439	01857-007	NUT,PLAIN,HEXAGON.....	8
3	PAOZZ	5310000806004	96906	MS27183-14	WASHER,FLAT.....	8
* 4	PAOZZ	5305002693211	14544	S1594	SCREW,CAP,HEXAGON H.....	8
5	PAOZZ	5340012915190	74841	TKG5173-1	HANDLE,BOW.....	1
* 6	AFOZZ		74841	TKG5108-1	CABLE ASSY,GRABHAND.....	1
* 7	PAOZZ		04898	VKD5061-00	.SWAGING SLEEVE,WIRE.....	1
* 8	MOOZZ	4010001714236	19207	7068272	.ROPE,WIRE (1.58 FT 26) MAKE FROM P/N MIL-W-83420.....	1
9	PAOZZ	5315011710750	96652	21-09	.PIN,LOCK.....	2
10	PAOZZ	5340012909661	74841	TKG5154-1	BRACKET,MOUNTING.....	2
11	PAOZZ	5310009359021	96906	MS51943-35	NUT,SELF-LOCKING,HE.....	8
12	PAOZZ	5310000806004	96906	MS27183-14	WASHER,FLAT.....	8
13	PAOZZ		03670	14089	GROMMET.....	8
* 14	PAOZZ	5305000680511	80204	B1821BH038C125N	SCREW,CAP,HEXAGON H.....	8
15	PFOZZ	2510012905695	74841	TKG5016-1	FRAME SECTION,STRUC.....	1
* 16	PAOZZ	5310009517209	96906	MS27183-22	WASHER,FLAT.....	6
17	PAOZZ	5310002416664	96906	MS51943-44	NUT,SELF-LOCKING,HE.....	6
* 18	PAOZZ	5305007272283	80204	B1821BH063F150N	SCREW,CAP,HEXAGON H.....	6
19	XDHZZ		74841	TKG5043-1	FRAME ASSY,CHASSIS.....	1
20	PAOZZ	5310013063480	74841	ZKA9866	NUT,SELF-LOCKING,BL.....	24
21	PAOZZ	5306012899144	74841	ZKA 9865	BOLT,EXTERNALLY REL.....	24
22	PAOZZ	5310000806004	96906	MS27183-14	WASHER,FLAT.....	12
23	PAOZZ	5310009359021	96906	MS51943-35	NUT,SELF-LOCKING,HE.....	12
24	PFOZZ	5340012902752	74841	TKG5341-1	BRACKET,MOUNTING.....	2
25	PAOZZ	5305002693211	14544	S1594	SCREW,CAP,HEXAGON H.....	12
					END OF FIGURE	

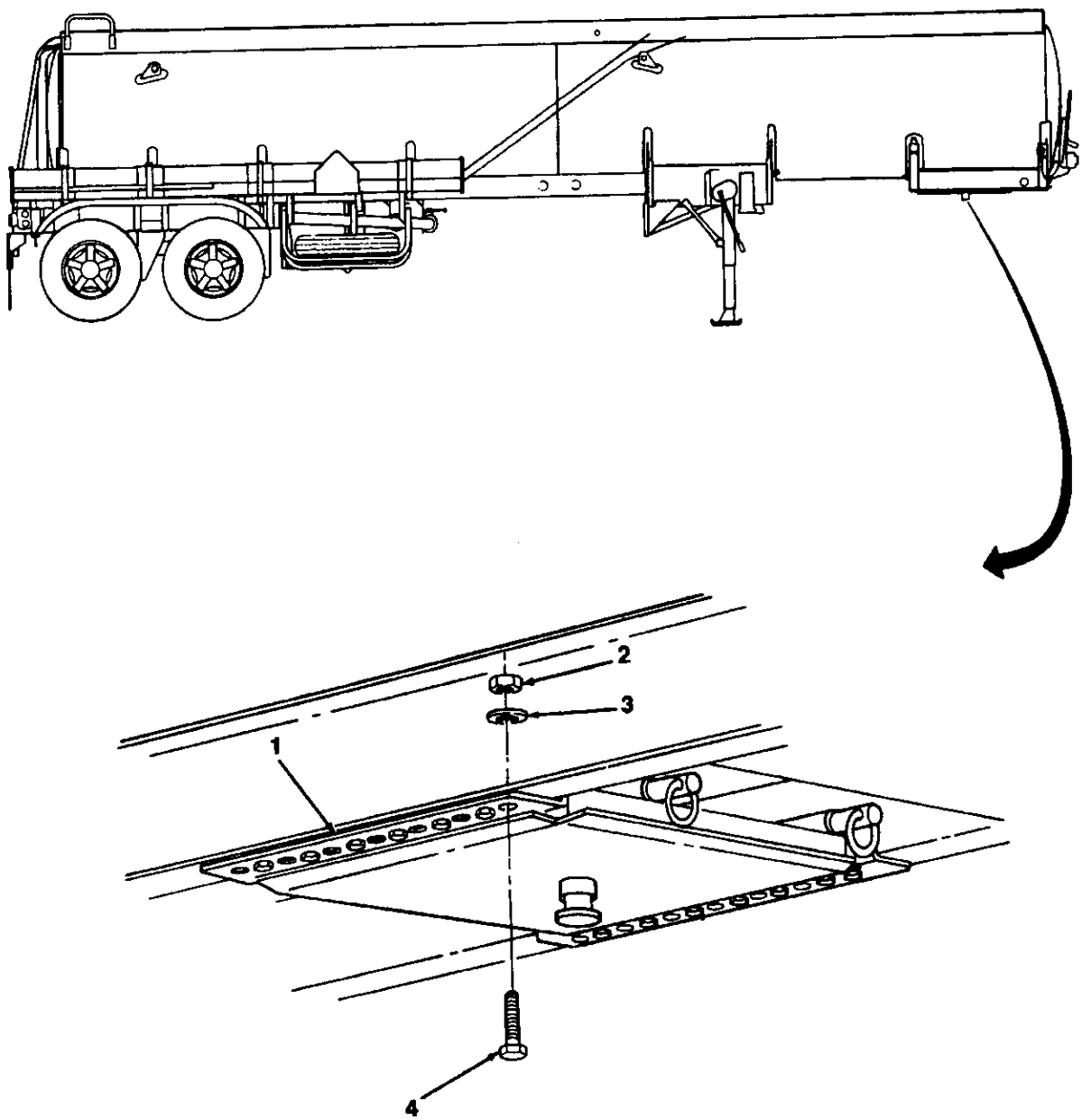


Figure 22. Upper Coupler Assembly and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1503 PINTLES AND TOWING ATTACHMENTS	
				FIG. 22 UPPER COUPLER ASSEMBLY AND RELATED HARDWARE	
1	PBFZZ	74841	TKG5084-1	FIFTH WHEEL ASSEMBLY	1
2	PAFZZ	96906	MS51943-44	NUT, SELF-LOCKING, HE	14
3	PAFZZ	96906	MS27183-22	WASHER, FLAT	14
4	PAFZZ	96906	MS90727-164	SCREW, CAP, HEXAGON H	14
				END OF FIGURE	

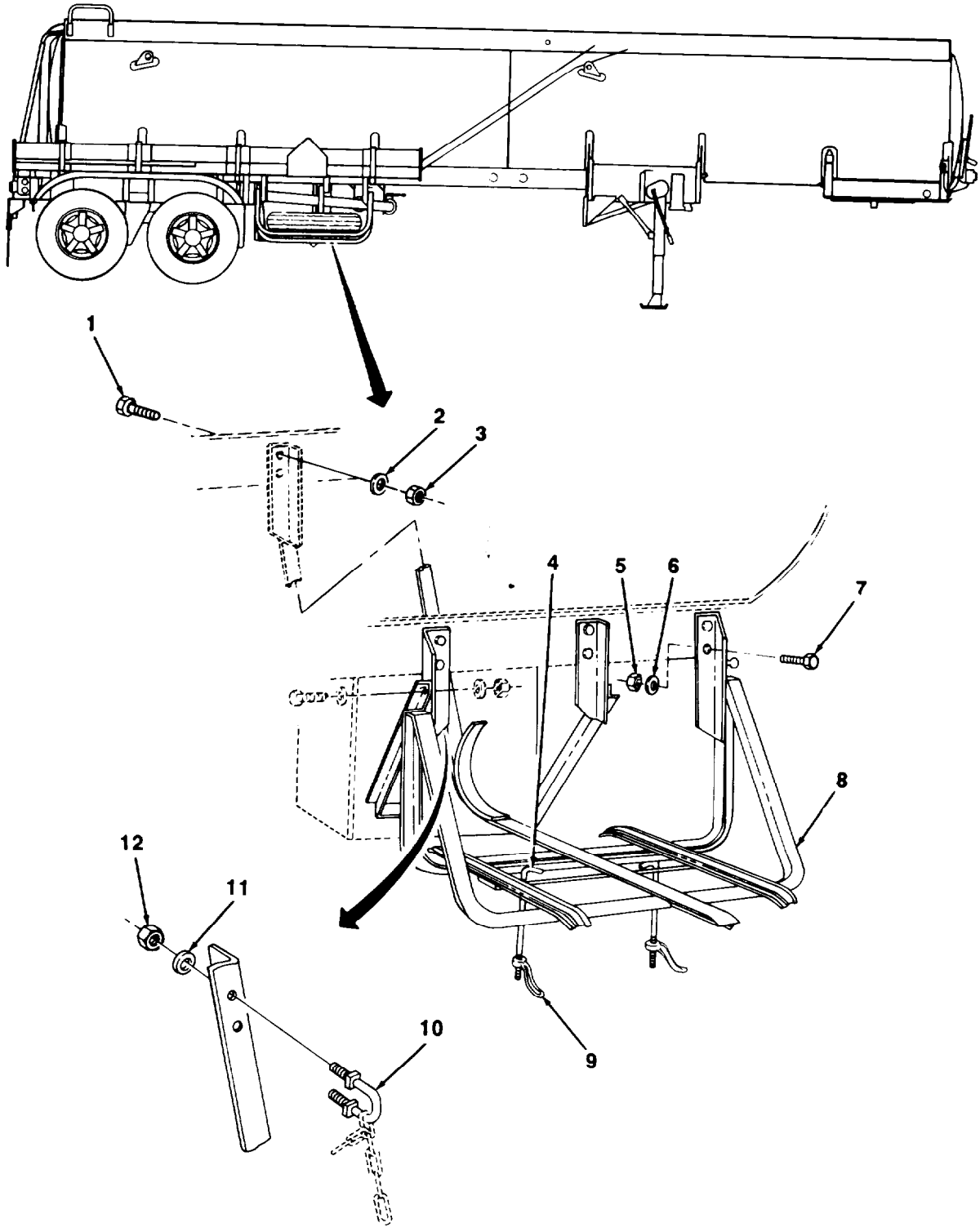


Figure 23. Tire Carrier Assembly and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1504 SPARE WHEEL CARRIER AND TIRE LOCK	
				FIG, 23 TIRE CARRIER ASSEMBLY AND RELATED HARDWARE	
1	PAOZZ	96906	MS90728-64	SCREW, CAP, HEXAGON H	2
2	PAOZZ	96906	MS27183-14	WASHER, FLAT	2
3	PAOZZ	96906	MS51943-35	NUT, SELF-LOCKING, HE	2
4	PAOZZ	74841	ZKA8903	BOLT, HOCK	2
5	PAOZZ	21439	01857-007	NUT, PLAIN, HEXAGON	4
6	PAOZZ	96906	MS27183-18	WASHER, FLAT	4
7	PAOZZ	96904	MS90728-113	SCREW, CAP, HEXAGON H	4
8	PFOZZ	74841	TKG5273-1	SUPPORT TIRE	1
9	PAOZZ	96966	MS51468-C5	NUT, PLAIN, WING	2
10	PAOZZ	74841	VKA0909	BOLT, U, PIPE	1
11	PAOZZ	14109	FSP7-F2-1	WASHER	2
12	PAOZZ	24617	120375	NUT, PLAIN, HEXAGON	4
				END OF FIGURE	

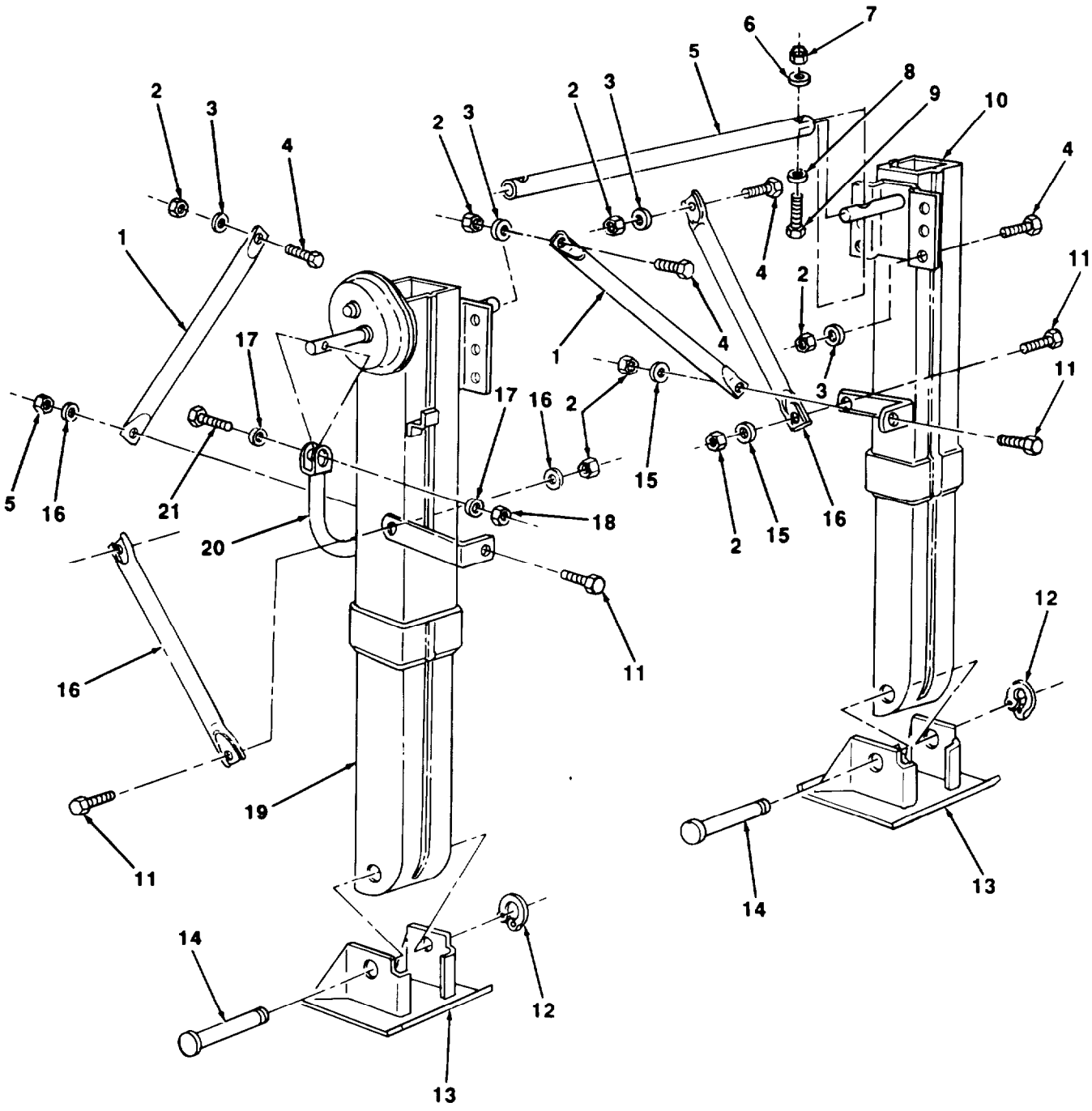


Figure 24. Landing Gear, Crank Handle, Pads, Brackets, and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1507 LANDING GEAR, LEVELING JACKS	
				FIG. 24 LANDING GEAR, CRANK HANDLE, PADS, BRACKETS, AND RELATED HARDWARE	
1	PAOZZ	74841	TKG5209-2	BRACKET, MOUNTING	2
2	PAOZZ	96906	MS51943-44	NUT, SELF-LOCKING, HE	20
3	PAOZZ	76301	32-21088-5	WASHER, FLAT	16
4	PAOZZ	96906	MS90727-164	SCREW, CAP, HEXAGON H	16
5	PAOZZ	74841	TKG5208-1	FRAME SECTION, STRUC	1
6	PAOZZ	96906	MS27183-12	WASHER, FLAT	2
7	PAOZZ	96906	MS51967-5	NUT, PLAIN, HEXAGON	2
8	PAOZZ	96906	MS27183-14	WASHER, FLAT	2
9	PAOZZ	74841	S-XA0244	BOLT, SHOULDER	2
10	PFOZZ	74841	S-0F4399-54	LEG, SEMITRAILER RET	1
11	PAOZZ	96906	MS90727-162	SCREW, CAP, HEXAGON H	4
12	PAOZZ	14109	S-0F0486-1	RING, RETAINING	4
13	PFOZZ	74841	S-CE3719-2	SHOE, JACK-SUPPORT	2
14	PFOZZ	14109	S-CF0487-1	AXLE TUBE	2
15	PAOZZ	62793	104JC05-28	WASHER, FLAT	4
16	PAOZZ	74841	TKG5209-1	BRACKET, MOUNTING	2
17	PAOZZ	96906	MS27183-14	WASHER,FLA7	2
18	PAOZZ	96906	MS51943-35	NUT, SELF-LOCKING, HE	1
19	PFOZZ	74841	S-CF4395-53	LEG, SEMITRAILER RET	1
20	XDOZZ	6W170	SWA6215	HANDLE, MANUAL CONTR	1
21	PAOZZ	96906	MS90728-70	SCREW, CAP, HEXAGON H	1

END OF FIGURE

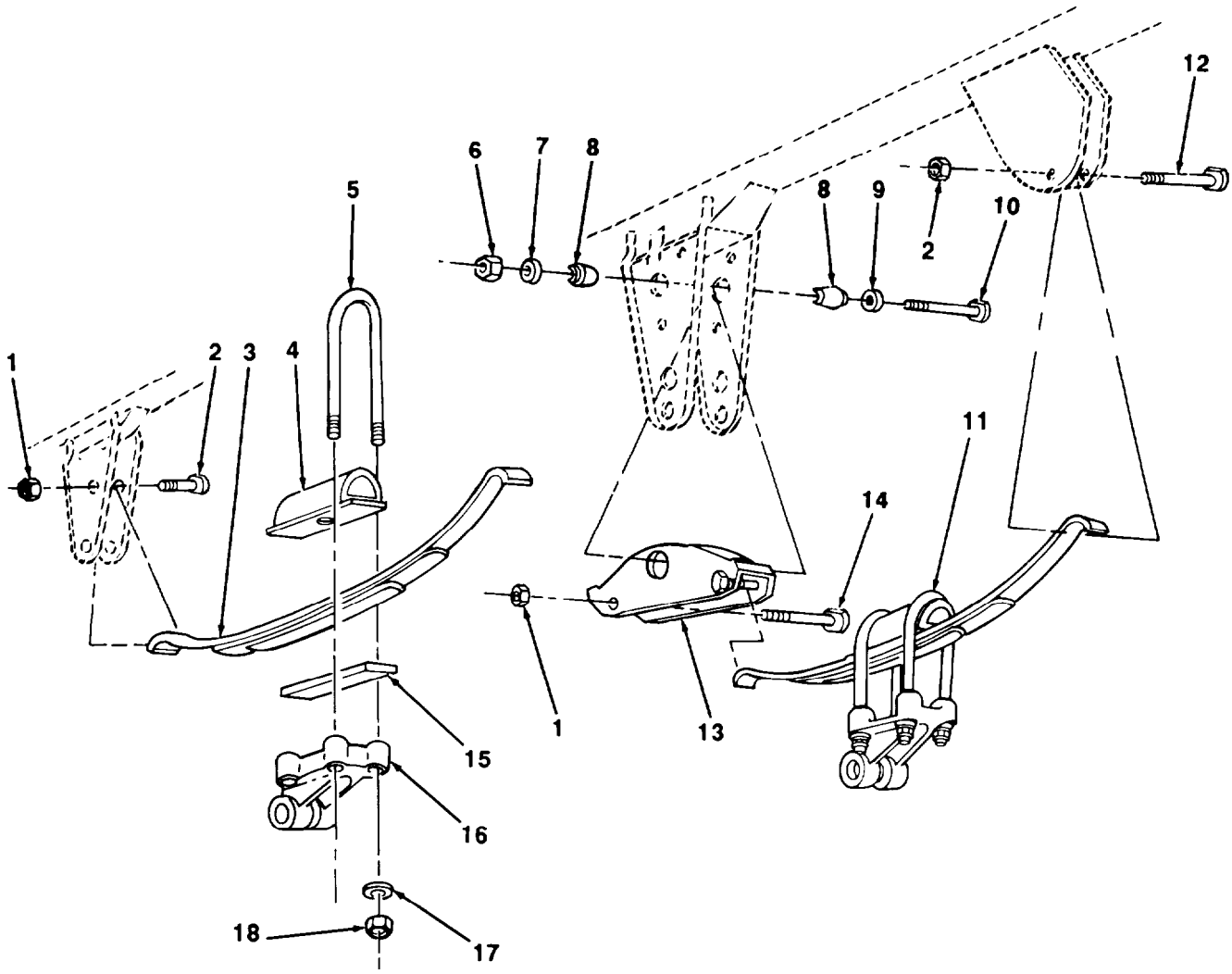


Figure 25. Springs and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 16 SPRINGS AND SHOOK ABSORBERS	
				GROUP: 1601 SPRINGS	
				FIG. 25 SPRINGS AND RELATED HARDWARE	
1	PAOZZ	96906	MS51922-49	NUT, SELF-LOCKING, HE	6
2	PAOZZ	24617	455394	SCREW, CAP, HEXAGON H	2
3	PBOZZ	74841	U-CD0511-1	SPRING ASSEMBLY, LEA	4
4	PAOZZ	74841	U-CE8801-1	SADDLE, PIPE COVERIN	4
5	PA0ZZ	74841	U-XA0046-17	BOLT, U	4
6	PAOZZ	96906	MS51943-50	NUT, SELF-LOCKING, HE	2
7	PAOZZ	74841	U-XA0003-1	WASHER, FLAT	2
8	PAOZZ	14109	U-XA0004	BUSHING, EQUALIZER	4
9	PAOZZ	14109	U-XAC356-2	WASHER	2
10	PAOZZ	74841	U-XAC015	BOLT, SHOULDER	2
11	PAOZZ	74841	U-XAC046-16	BOLT, U	4
12	PAOZZ	74841	ZKA8295	BOLT, EXTERNALLY REL	2
13	PBOZZ	74841	U-CF1459-1	EQUALIZER	2
14	PAOZZ	24617	271760	SCREW, CAP, HEXAGON H	2
15	PAOZZ	74841	U-CD4502-1	SPACER, PLATE	2
16	PAOZZ	74841	A-XA0495-1	HOLDER, BRAKE	4
17	PAOZZ	96906	MS27183-25	WASHER, FLAT	16
18	PAOZZ	96906	MS35690-1424	NUT, PLAIN, HEXAGON	16

END OF FIGURE

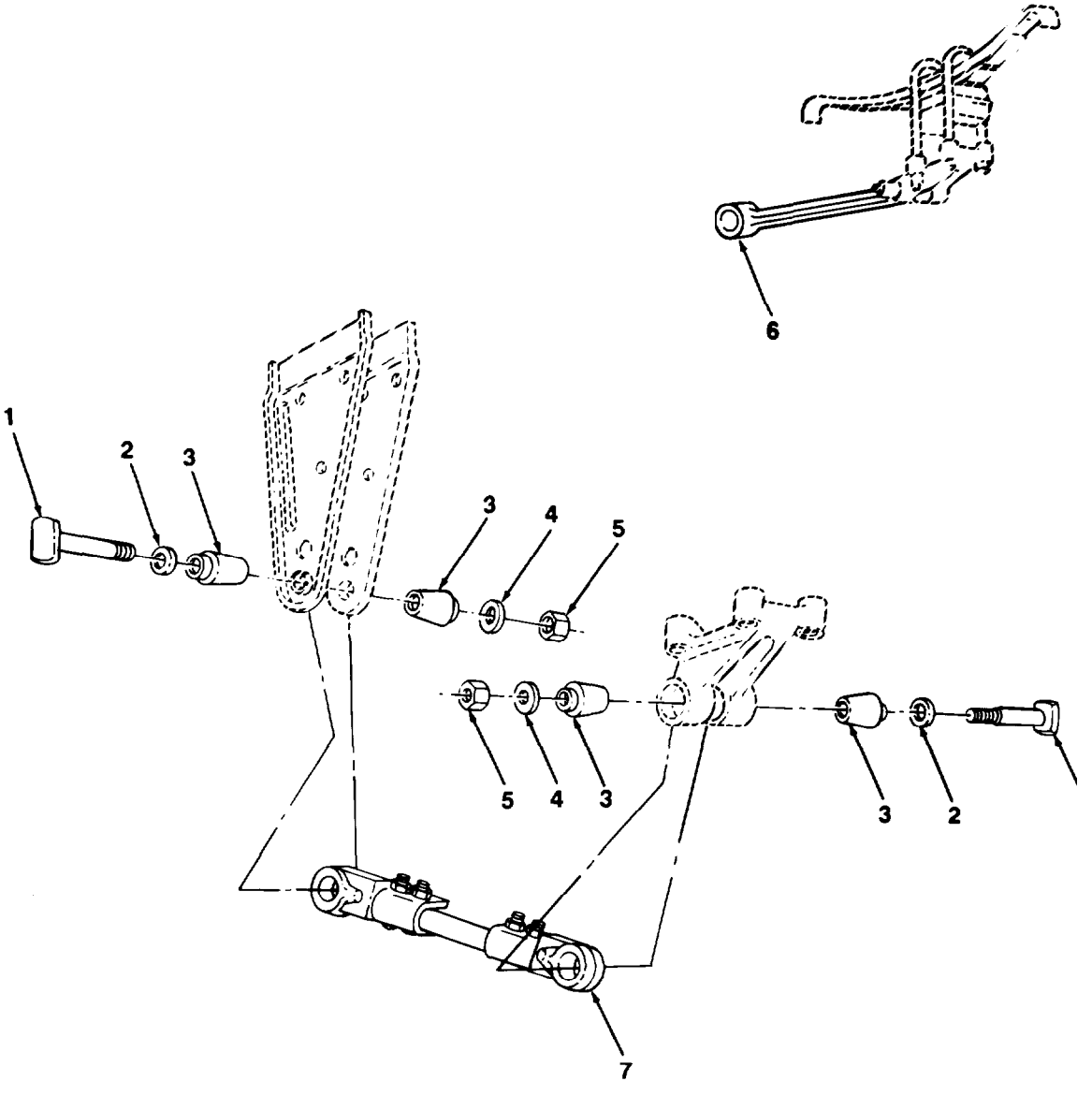


Figure 26. Radius Rods and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1605 TORQUE, RACIUS, AND STABILIZER RODS	
				FIG. 26 RADIUS RODS AND RELATED HARDWARE	
1	PAOZZ	74841	U-XAC016-X	BOLT, SHOULDER	8
2	PAOZZ	30003	67A3140117-1	WASHER, FLAT	8
3	PAOZZ	74841	U-XA0011	BUSHING, RUBBER	16
4	PAOZZ	97907	9235215	WASHER, FLAT	8
5	PAOZZ	96906	MS51943-50	NUT, SELF-LOCKING, HE	8
6	PAOZZ	74841	U-XA0026	CONNECTING LINK, RIG	2
7	PAOZZ	74841	U-CF2640-1	ROD, ALIGNING, VEHICU	i
				END OF FIGURE	

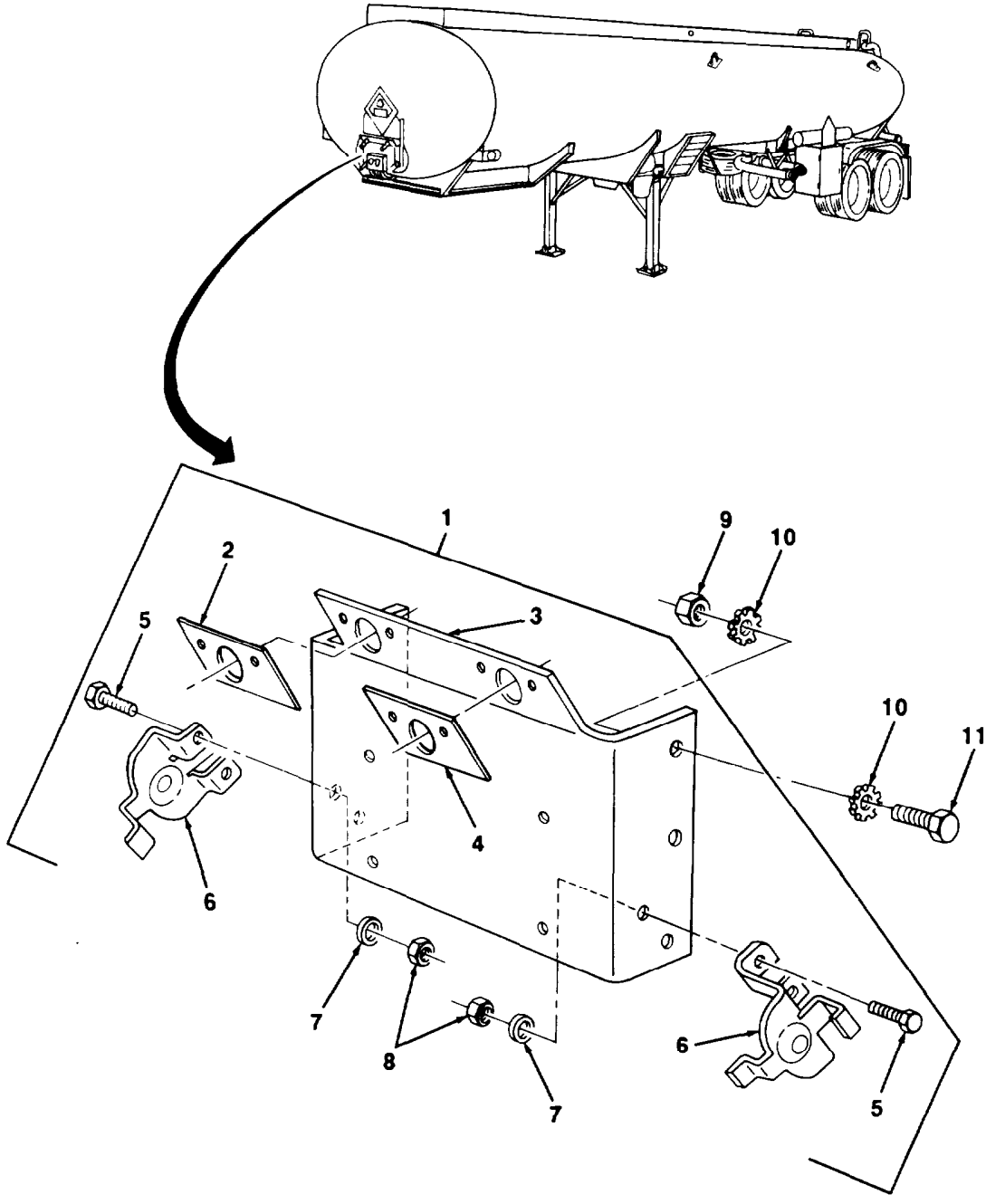


Figure 27. Nose Adapter Bracket and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 18 BODY, CAB, HOOD, AND HULL	
					GROUP 1801 BODY, CAB, HOOD, AND HULL ASSEMBLIES	
					FIG. 27 NOSE ADAPTER BRACKET AND RELATED HARDWARE	
1	PAOOO	4730012856074	74841	TKG5219-1	ADAPTER,STRAIGHT T.....	1
2	PAOZZ	9905009997369	96906	MS53007-2	.PLATE,IDENTIFICATIO (EMERGENCY)...	1
3	PAOZZ	5340012902751	74841	TKG5290-1	.BRACKET,MOUNTING.....	1
4	PAOZZ	9905009997370	96906	MS53007-1	.PLATE,IDENTIFICATIO (SERVICE).....	1
* 5	PAOZZ	5305000680509	80204	B1821BH025C125N	.SCREW,CAP,HEXAGON H.....	4
6	PAOZZ	4730012687410	06721	10453110	.COUPLING HALF,QUICK.....	2
7	PAOZZ	5310009826580	96906	MS27183-1	.WASHER,FLAT.....	4
* 8	PAOZZ	5310003404953	96906	MS51943-50	.NUT,SELF-LOCKING,HE.....	4
9	PAOZZ	5310009359021	96906	MS51943-35	NUT,SELF-LOCKING,HE.....	4
10	PAOZZ	5310009221794	96906	MS16213-63	WASHER,LOCK.....	8
* 11	PAOZZ	5305000680511	80204	B1821BH038C125N	SCREW,CAP,HEXAGON H.....	4
					END OF FIGURE	

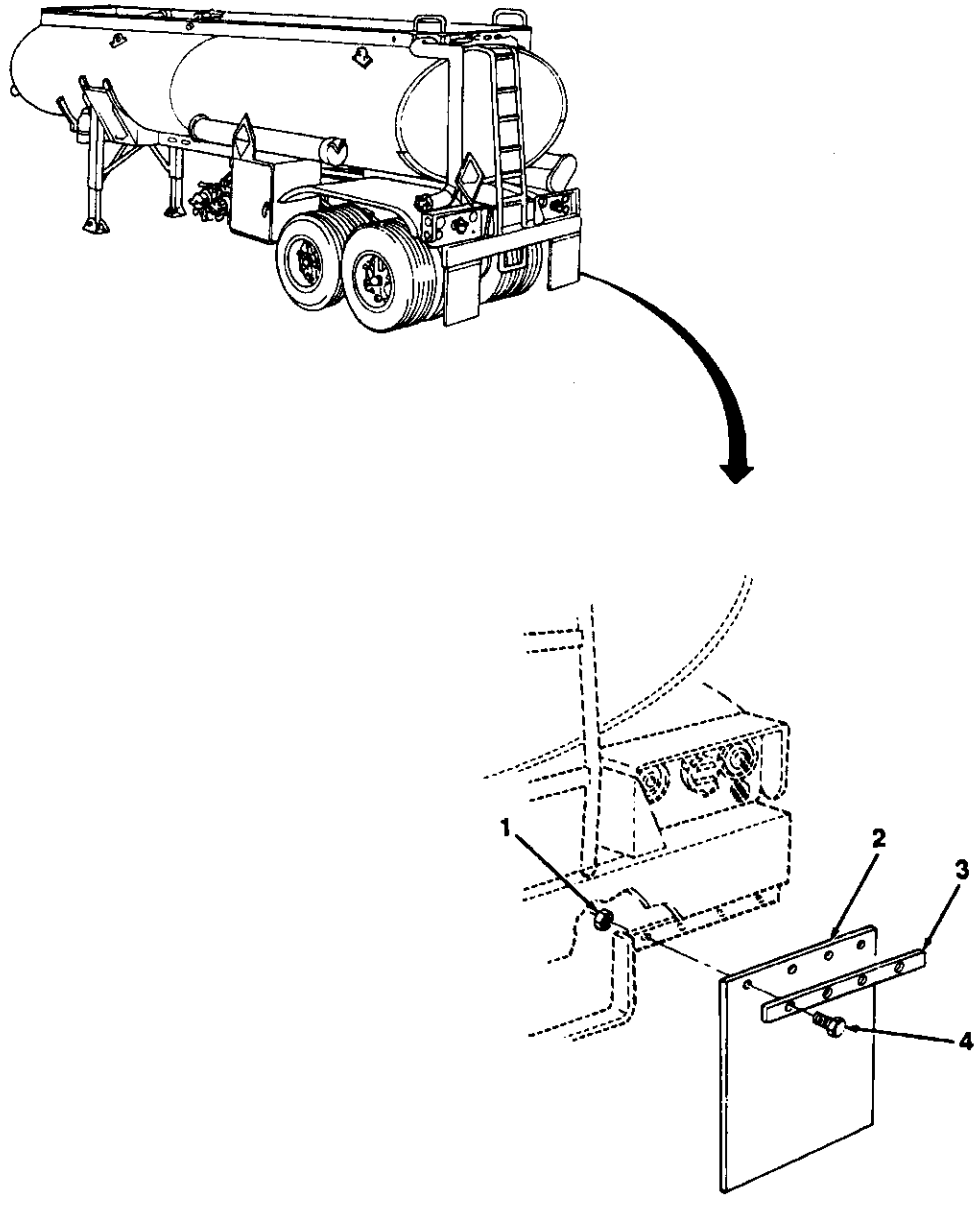


Figure 28. Splashguard and Components.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1801 BODY, CAB, HOOD, AND HULL ASSEMBLIES	
				FIG. 28 SPLASHGUARD AND COMPONENTS	
1	PAOZZ	96906	MS51967-5	NUT, PLAIN, HEXAGON	8
2	PAOZZ	78680	100059	GUARD, SPLASH, VEHICU	2
3	PAOZZ	74841	TKG5215-1	BRACKET, MOUNTING	2
4	PAOZZ	96906	MS90725-36	BOLT, MACHINE	8

END OF FIGURE

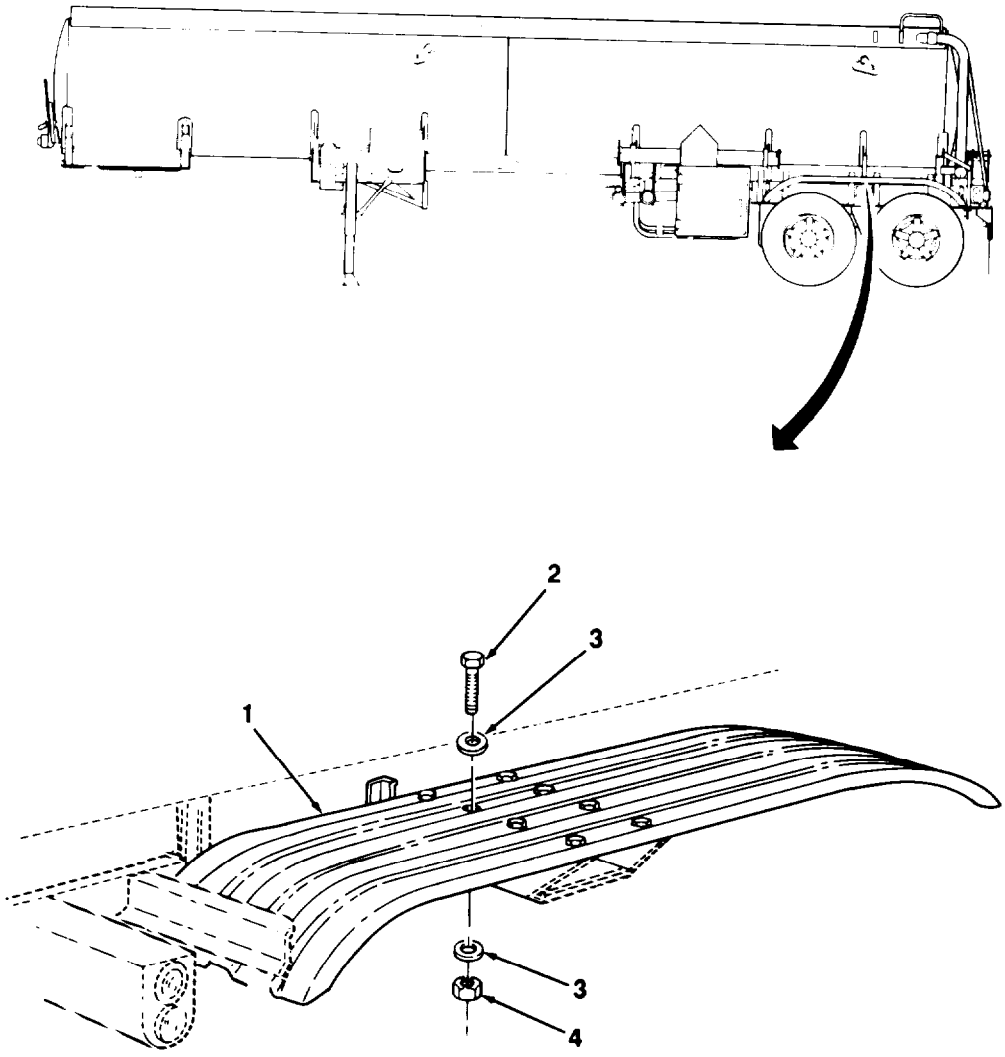


Figure 29. Fender and Attaching Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1802 FENDERS, RUNNING BOARDS WITH MOUNTING AND ATTACHING	
				WINDSHEILD, GLASS, ETC.	
				FIG. 29 FENCER AND ATTACHING HARDWARE	
1	PFOZZ	74841	TKA9276	FENCER, VEHICULAR	2
2	PAOZZ	97403	13222E0109	SCREW, ROLLER ASSEMB	28
3	PAOZZ	96906	MS27183-14	WASHER, FLAT	28
4	PAOZZ	96906	MS51943-35	NUT, SELF-LOCKING, HE	28
				END OF FIGURE	

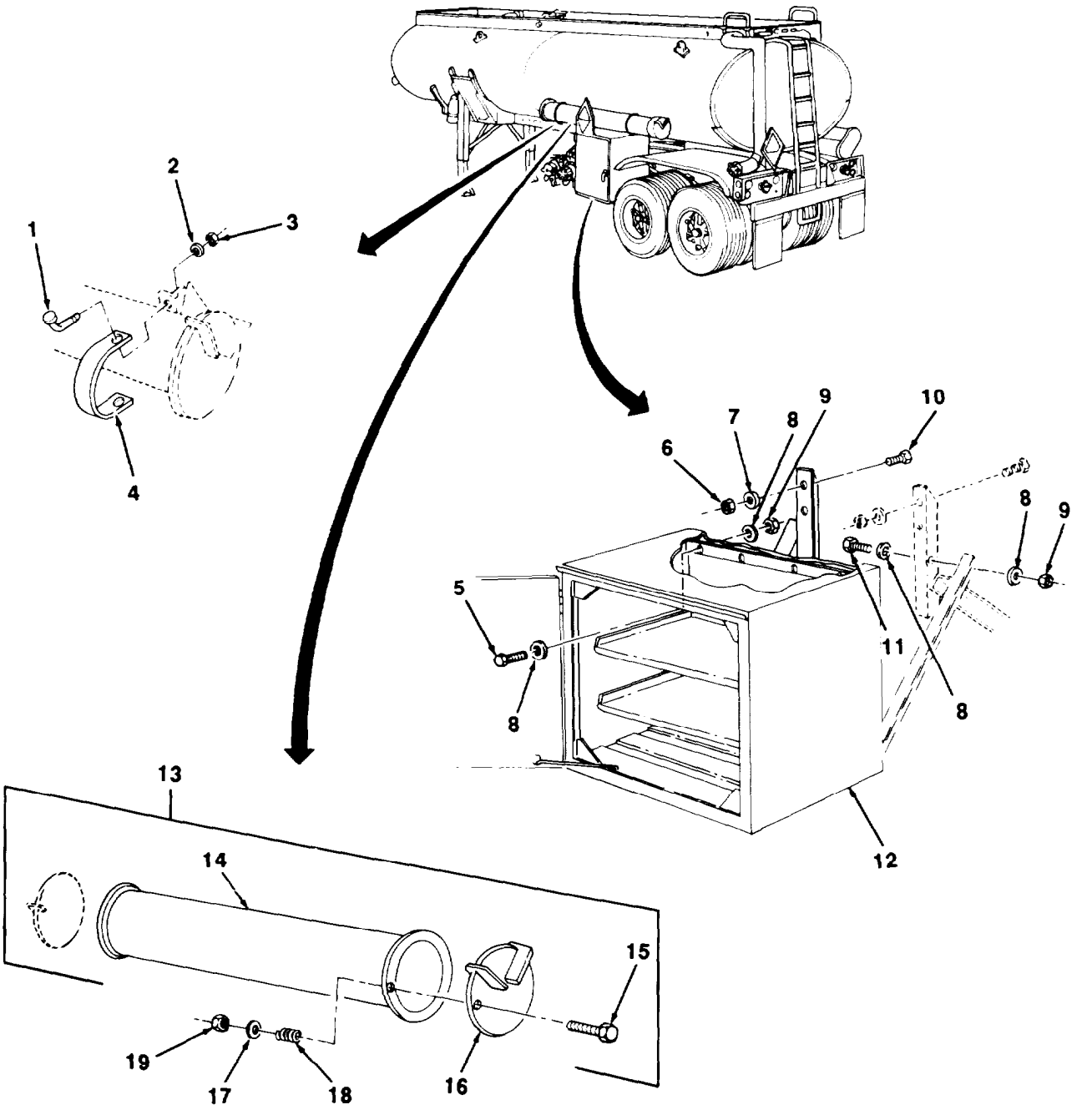


Figure 30. Ground Rod Tube Assembly, Stowage Cabinet, and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1808 STOWAGE RACKS, BOXES, STRAPS, CARRYING CASES, CABLE REELS, HOSE REELS, ETC.	
				FIG. 30 GROUND ROD TUBE ASSEMBLY, STOWAGE CABINET, AND RELATED HARDWARE	
1	PAOZZ	7V618	ZKA9836	BOLT,HOOK.....	4
2	PAOZZ	94231	3-C7620-311	WASHER,LOCK.....	4
3	PAOZZ	96906	MS51967-8	NUT,PLAIN,HEXAGON.....	4
4	PAOZZ	74841	TKG5230-1	STRAP,RETAINING.....	2
5	PAOZZ	96906	MS27183-18	WASHER,FLAT.....	2
6	PAOZZ	21439	01857-0C7	NUT,PLAIN,HEXAGON.....	2
7	PAOZZ	96906	MS16213-63	WASHER,LOCK.....	1
8	PAOZZ	96906	MS27183-14	WASHER,FLAT.....	12
9	PAOZZ	96906	MS51943-35	NUT,SELF-LOCKING,HE.....	6
10	PAOZZ	96906	MS90728-113	SCREW,CAP,HEXAGON H.....	2
11	PACZZ	96906	MS90728-64	SCREW,CAP,HEXAGON H.....	6
12	PFOZZ	74841	TKG5161-1	BOX,ACCESSORIES STC.....	1
13	PFCOO	74841	TKG5198-1	TUBE ASSEMBLY,METAL.....	1
14	XAOZZ	74841	TKG5C7C-1	.PIPE,GROUND ROD TUB.....	1
15	PAOZZ	96906	MS90728-12	.SCREW,CAP,HEXAGON H.....	2
16	PAOZZ	74841	TKG5204-1	.COVER,ACCESS.....	2
17	PACZZ	19204	8437243-2	.SPRING,HELICAL,COMP.....	2
18	PAOZZ	96906	MS27183-1	.WASHER,FLAT.....	4
19	PAOZZ	96906	MS51943-31	.NUT,SELF-LOCKING,HE.....	2

END OF FIGURE

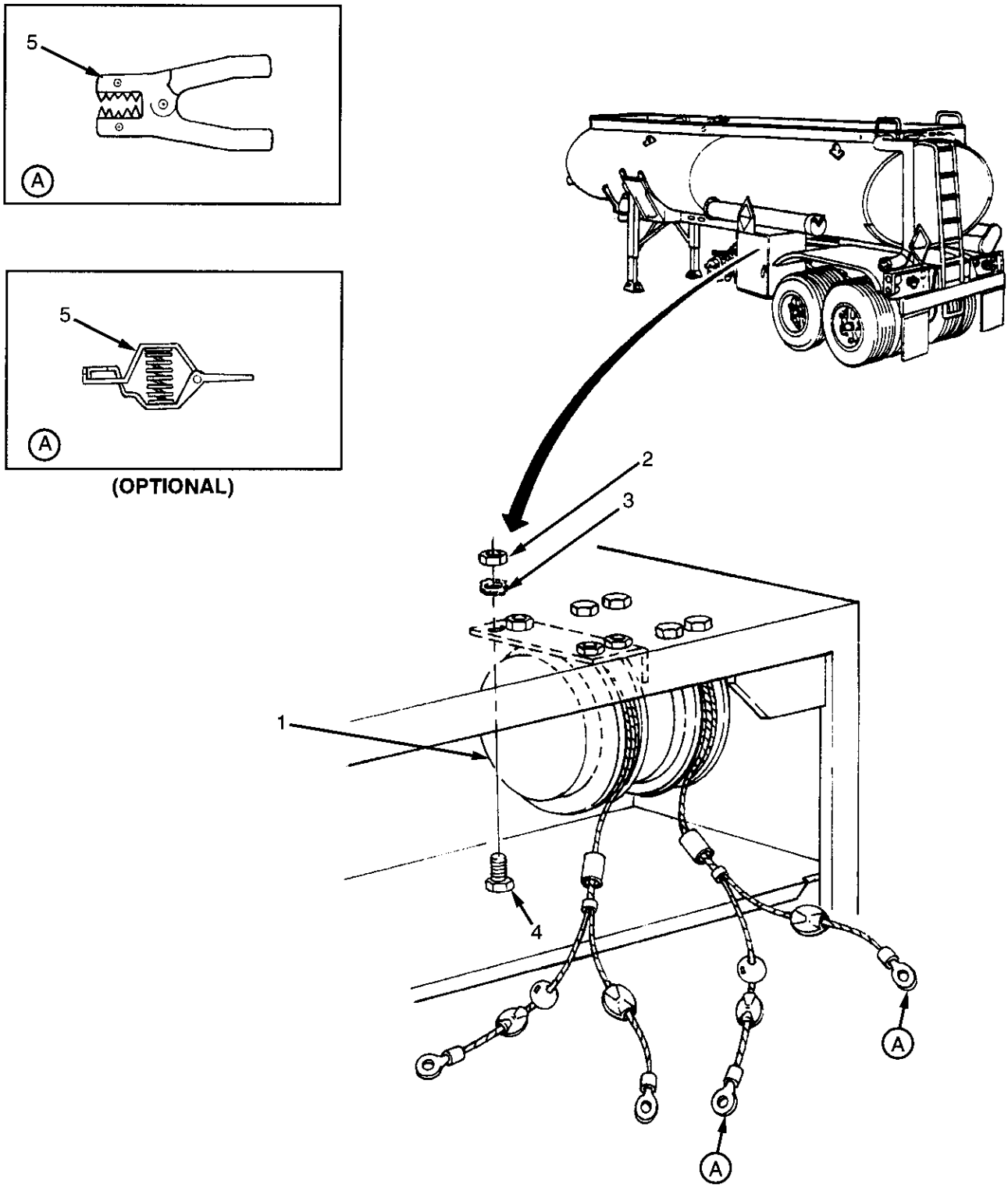


Figure 31. Grounding Reel and Mounting Hardware.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 1808 STOWAGE RACKS, BOXES, STRAPS, CARRYING CASES, CABLE REELS, HOSE REELS, ETC.	
					FIG. 31 GROUNDING REEL AND MOUNTING HARDWARE	
1	PAOZZ	2540009305303	19207	10959979	CABLE ASSEMBLY AND (GROUND REEL)...	2
2	PAOZZ	5310007320558	96906	MS51967-8	NUT,PLAIN,HEXAGON.....	8
3	PAOZZ	5310009221794	96906	MS16213-63	WASHER,LOCK.....	8
4	PAOZZ	5305012104595	97403	13222E0109	SCREW,ROLLER ASSEMB.....	8
* 5	PAOZZ	5342009769355	76545	21C100AMP	CLIP.....	4
* 5	PAOZZ	5999001345844	81349	M83413/7-1	CLIP,ELECTRICAL (OPTIONAL).....	4
					END OF FIGURE	

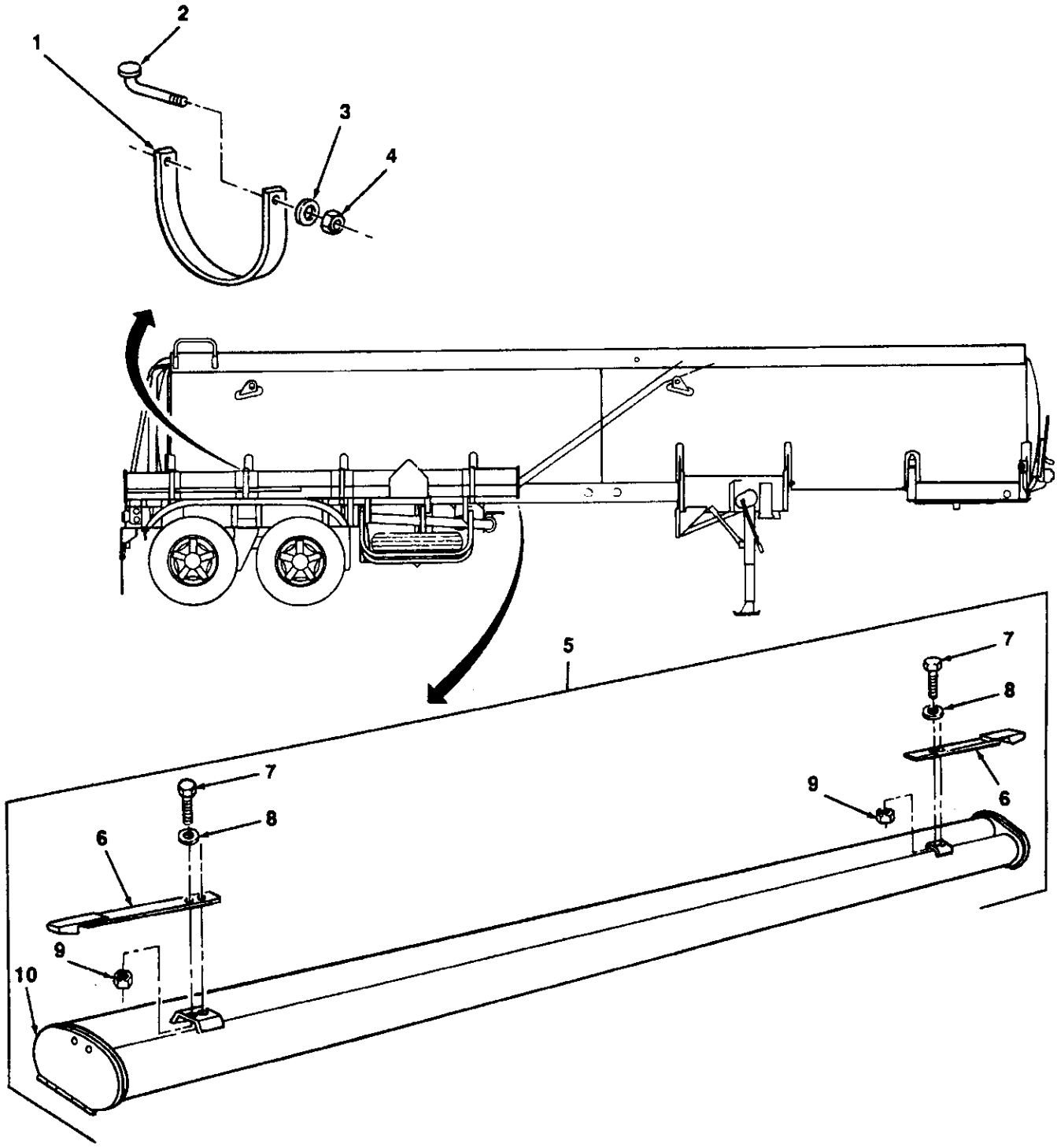


Figure 32. Hose and Grounding Rod Tube Assembly.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1808 STOWAGE RACKS, BOXES, STRAPS, CARRYING CASES, CABLE REELS, HOSE REELS, ETC.	
				FIG. 32 HOSE AND GROUNDING ROD TUBE ASSEMBLY	
1	PAOZZ	74841	TKG5230-2	STRAP, RETAINING	4
2	PAOZZ	7V618	ZKA9836	BOLT, HOOK	8
3	PAOZZ	94231	3-0762D-311	WASHER, LOCK	8
4	PAOZZ	96906	MS51943-35	NUT, SELF-LOCKING, HE	8
5	PFOOO	74841	TKGS228-1	TUBE ASSEMBLY, METAL	1
6	PAOZZ	73685	5697-C	• CATCH, FRICTION	2
7	PAOZZ	96906	MS90728-8	• SCREW, CAP, HEXAGON H	4
8	PAOZZ	96906		• WASHER, FLAT	4
9	PAOZZ	96906	MS51943-31	• NUT, SELF -LOCKING, HE	4
10	XAOZZ	74841	TKA6754	• TUBING	2
				END OF FIGURE	

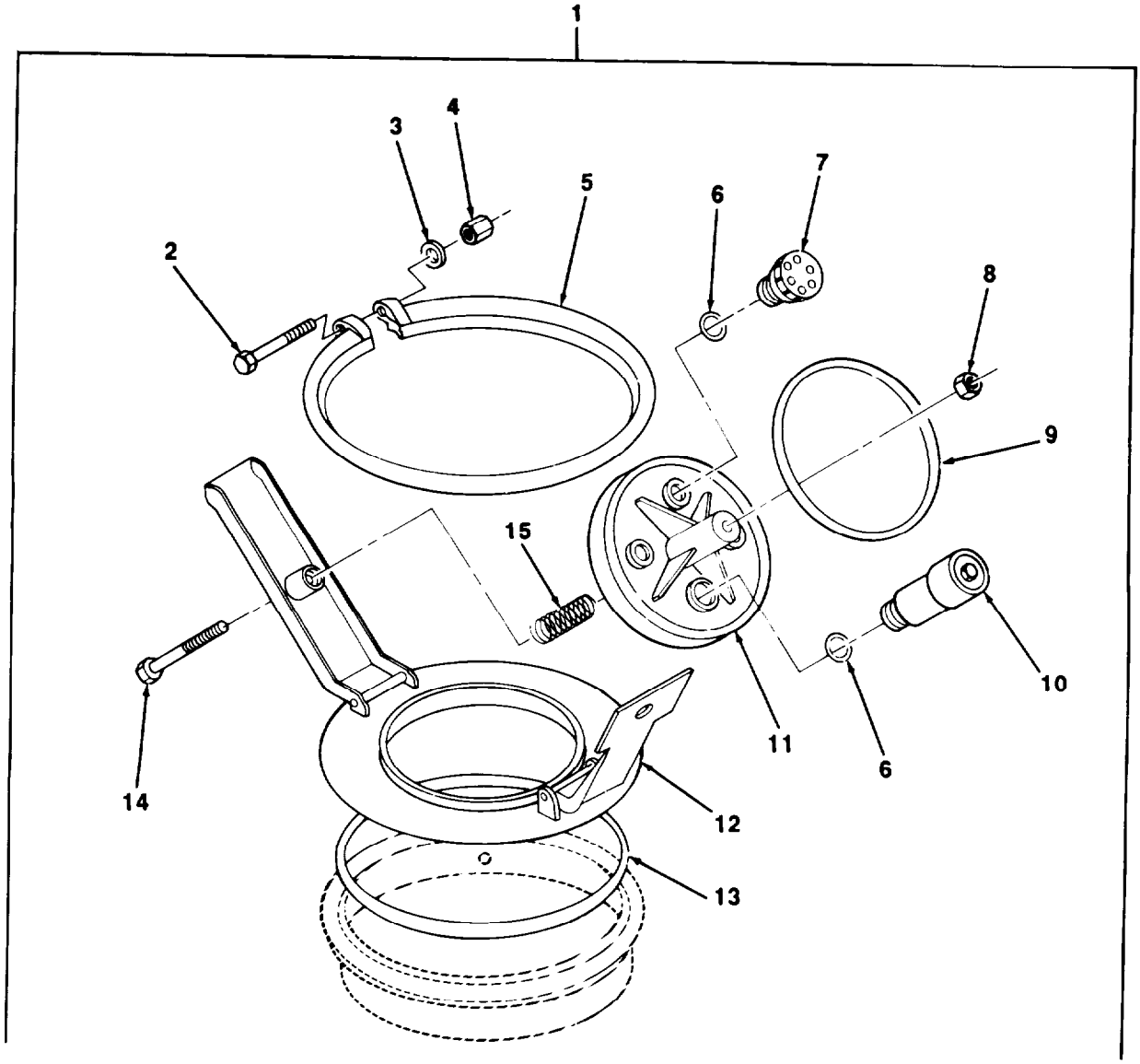


Figure 33. Manhole Cover Assembly and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP : 1811 TANK BODIES	
				FIG. 33 MANHOLE COVER ASSEMBLY AND RELATED HARDWARE	
1	PBOOO	13226	FVA97638X8	MANHOLE TOP ASSEMBL	1
2	PAOZZ	49632	30290P	• BOLT, EXTERNALLY REL	1
3	PAOZZ	49632	30310P	• WASHER, LOCK	1
4	PAOZZ	13226	3030-BR	• NUT, PLAIN, HEXAGON	1
5	PAOZZ	49632	30360P	• CLAMP, LOOP	I
4	PAOZZ	13226	3716-BN	• GASKET	2
7	PAOZZ	49632	6234AL	• VENT, INBREATHING	1
8	PAOZZ	96906	MS51967-15	• NUT, PLAIN, HEXAGON	1
9	PAOZZ	49632	31198N	• PACKING, PREFORMED	I
10	PAOZZ	13226	6238AL	• VALVE, POSITIVE CRAN	1
11	PAOZZ	13226	8046AL167	• COVER, MANHOLE	1
12	PAOZZ	13226	9463CP	• COVER, MANHOLE	1
13	PAOZZ	49632	3550BN	• GASKET	1
14	PAOZZ	49632	31390P	• BOLT, MACHINE	1
15	PAOZZ	49632	31290P	• SPRING	1
				END OF FIGURE	

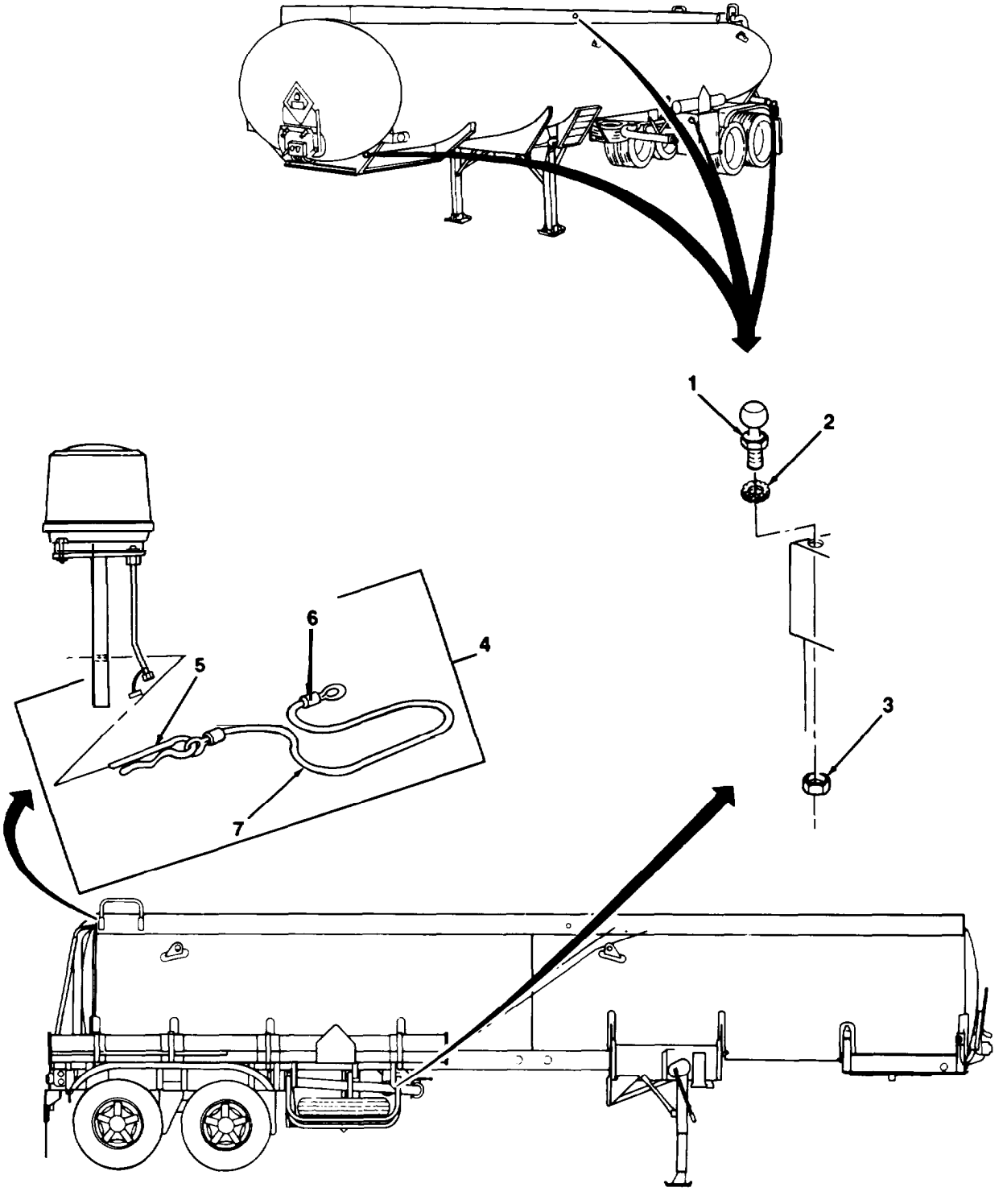


Figure 34. Static Ball and Cable Assembly, Convoy Light.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 1811 TANK BODIES	
				FIG. 34 STATIC BALL AND CABLE ASSEMBLY, CONVOY LIGHT	
1	PAOZZ	74841	TKA7579	STUD,BALL	6
2	PAOZZ	96906	MS16213-63	WASHER, LOCK	6
3	PAOZZ	96906	MS51943-35	NUT, SELF-LOCKING, HE	6
4	AFOOO	74841	TKG5108-2	CABLE ASSY, LIGHT	1
5	PAOZZ	96652	21-09	• PIN, LOCK	1
6	PAOZZ	04898	VKD5061-00	• SWAGING SLEEVE, WIRE	2
7	MFOZZ	74841	VKA8995-3	• CABLE, 1-16 DIA (10.75FT.LG.) MAKE FROM P/N MILW83420TYPE1-A1/8DIA7X19,	1
				END OF FIGURE	

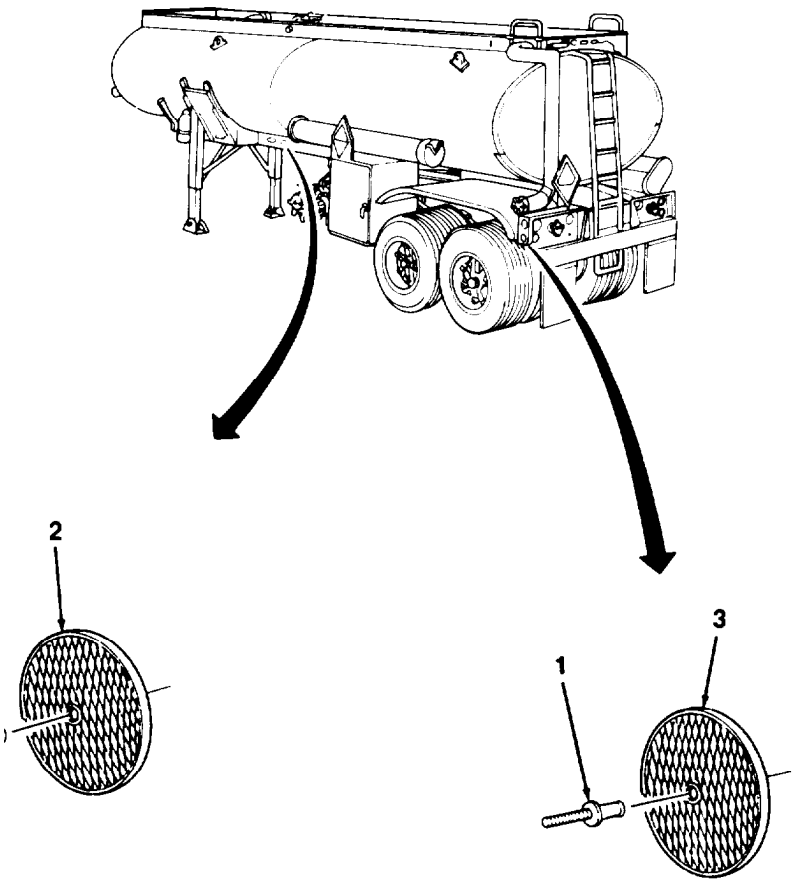


Figure 35. Reflectors and Mounting Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 22 BODY, CHASSIS, AND HULL ACCESSORY ITEMS	
				GROUP: 2202 ACCESSORY ITEMS	
				FIG. 35 REFLECTORS AND MOUNTING HARDWARE	
1	PAOZZ	07707	AD610CABS	RIVET, BLIND	8
2	PAOZZ	77977	47A	REFLECTOR, INDICATIN (AMBER)	4
3	PAOZZ	71951	98037R	REFLECTOR, INDICATIN (RED)	4
				END OF FIGURE	

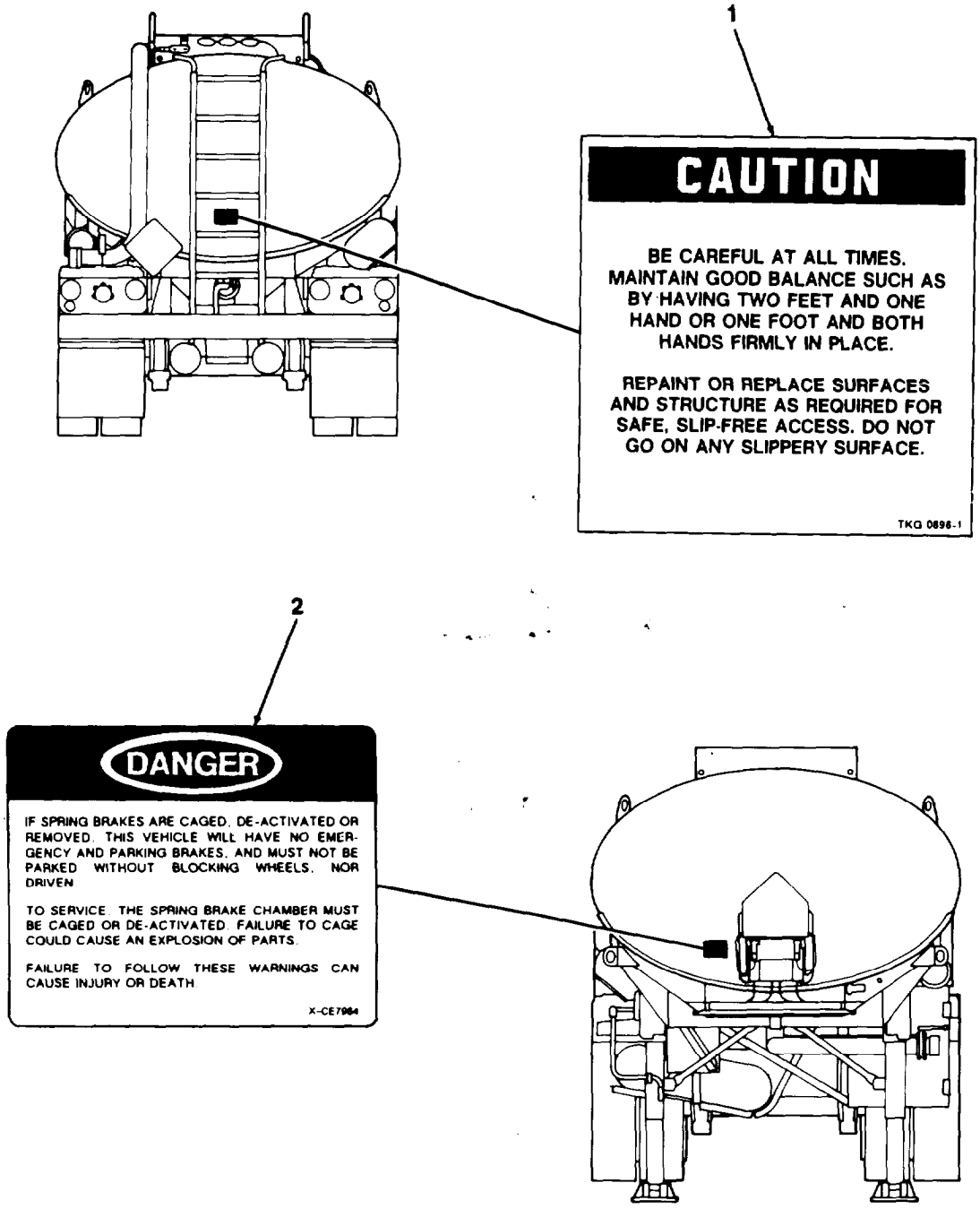

1
CAUTION
BE CAREFUL AT ALL TIMES. MAINTAIN GOOD BALANCE SUCH AS BY HAVING TWO FEET AND ONE HAND OR ONE FOOT AND BOTH HANDS FIRMLY IN PLACE.
REPAINT OR REPLACE SURFACES AND STRUCTURE AS REQUIRED FOR SAFE, SLIP-FREE ACCESS. DO NOT GO ON ANY SLIPPERY SURFACE.
TKG 0896-1
2
DANGER
IF SPRING BRAKES ARE CAGED, DE-ACTIVATED OR REMOVED, THIS VEHICLE WILL HAVE NO EMERGENCY AND PARKING BRAKES, AND MUST NOT BE PARKED WITHOUT BLOCKING WHEELS, NOR DRIVEN.
TO SERVICE, THE SPRING BRAKE CHAMBER MUST BE CAGED OR DE-ACTIVATED. FAILURE TO CAGE COULD CAUSE AN EXPLOSION OF PARTS.
FAILURE TO FOLLOW THESE WARNINGS CAN CAUSE INJURY OR DEATH.
X-CE7984

Figure 36. Labels, Front and Rear.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 2210 DATA PLATES AND INSTRUCTION HOLDERS	
				FIG. 36 LABELS, FRONT AND REAR	
1	PAOZZ	74841	TKG0896-1	MARKER,IDENTIFICATI.....	1
2	PFOZZ	14109	X-CE7964-1	CAUTION PLATE.....	1

END OF FIGURE

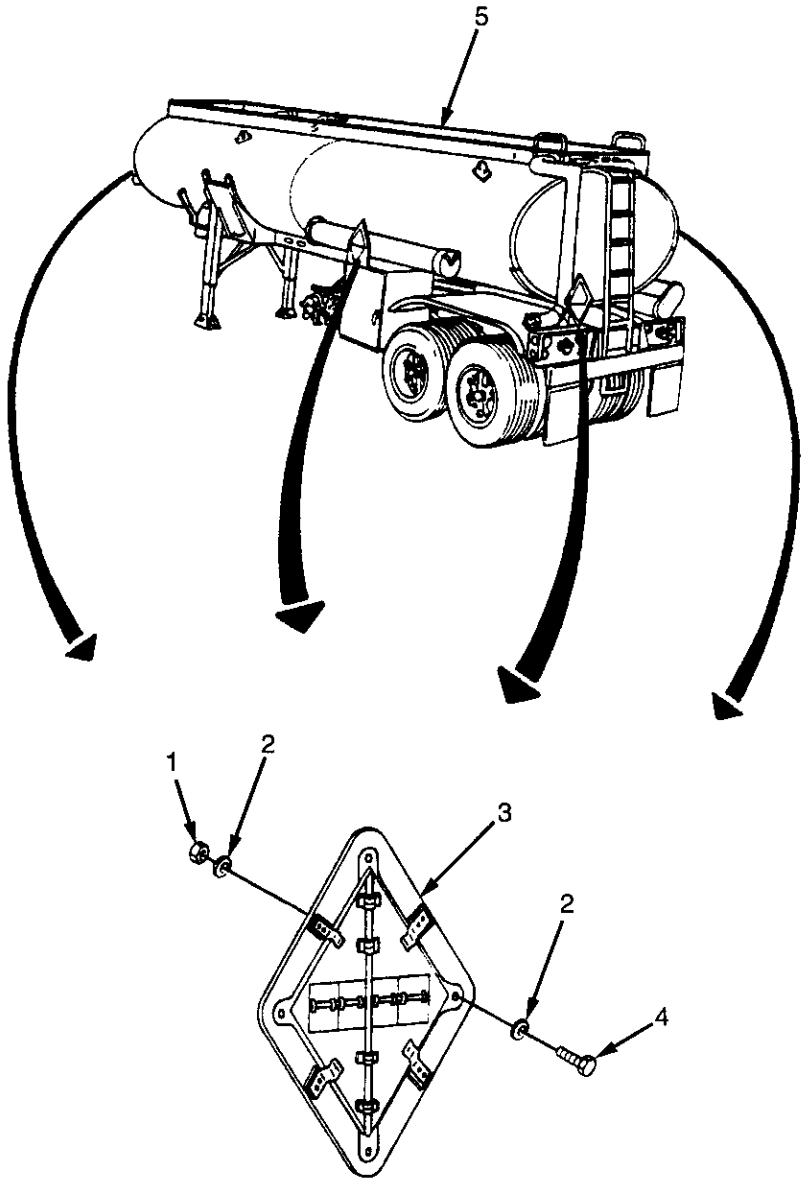


Figure 36A. Hazardous Warning Placards.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 2210 DATA PLATES AND INSTRUCTION HOLDERS	
					FIG. 36A HAZARDOUS WARNING PLACARDS	
* 1	PAOZZ	5310009261835	96906	MS21083C3	NUT,SELF-LOCKING,HE.....	16
* 2	PAOZZ	5310006151556	28527	2616950G001	WASHER,FLAT.....	32
* 3	PAOZZ	7690014232823	19207	12380149	POSTER.....	4
* 4	PAOZZ	5310007616882	96906	MS51967-2	NUT,PLAIN,HEXAGON.....	16
					END OF FIGURE	

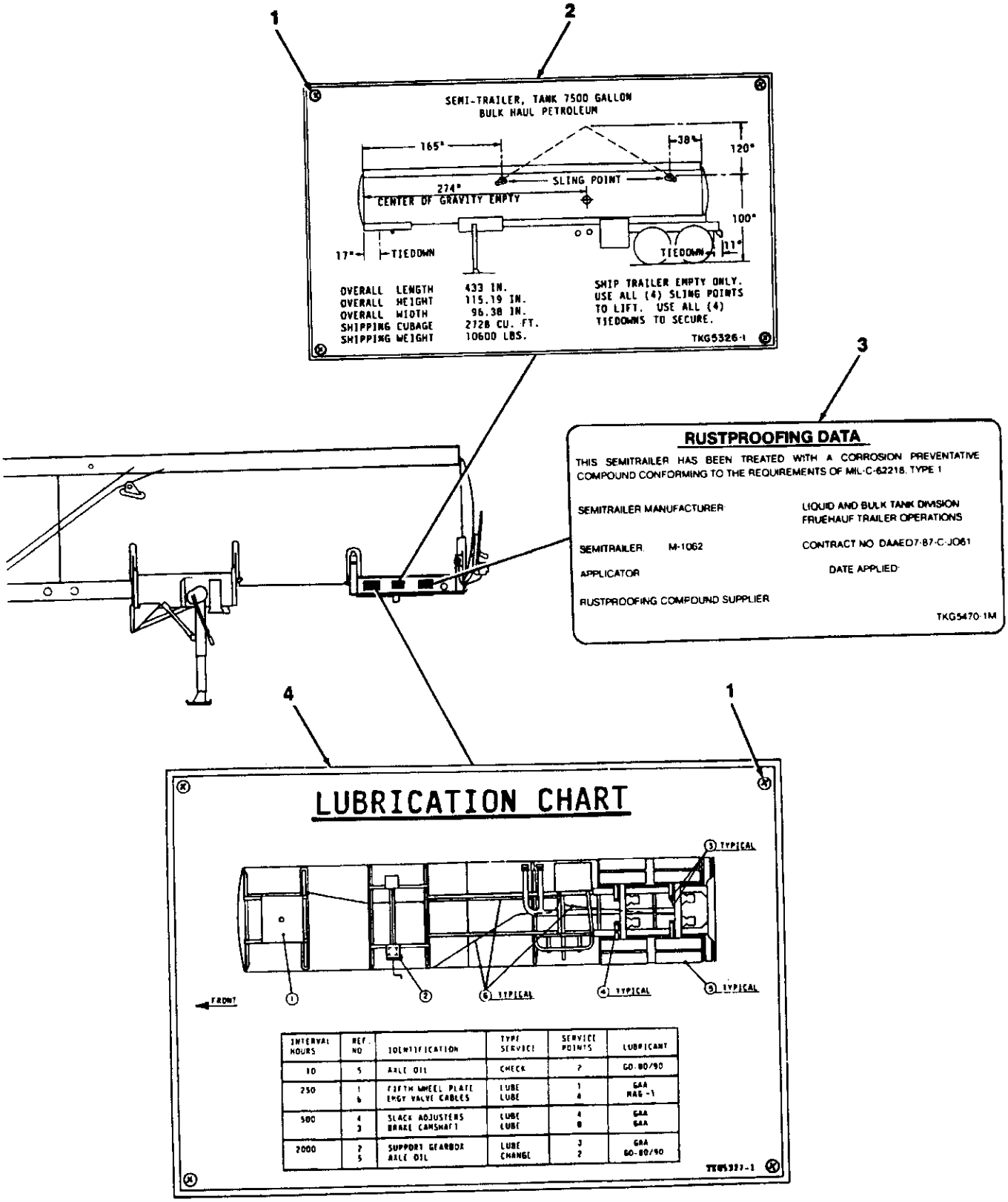


Figure 37. Plates and Labels, Right Front.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 2210 DATA PLATES AND INSTRUCTION HOLDERS	
				FIG, 37 PLATES AND LABELS, RIGHT FRONT	
1	PAOZZ	74841	TKA6640	RIVET, BLIND	8
2	PFOZZ	74841	TKG5326-1	PLATE, IDENTIFICATIO	1
3	PAOZZ	74841	TKG5470-1	DECAL	1
4	PFOZZ	74841	TKG5327-1	PLATE, IDENTIFICATIC	1
				END OF FIGURE	

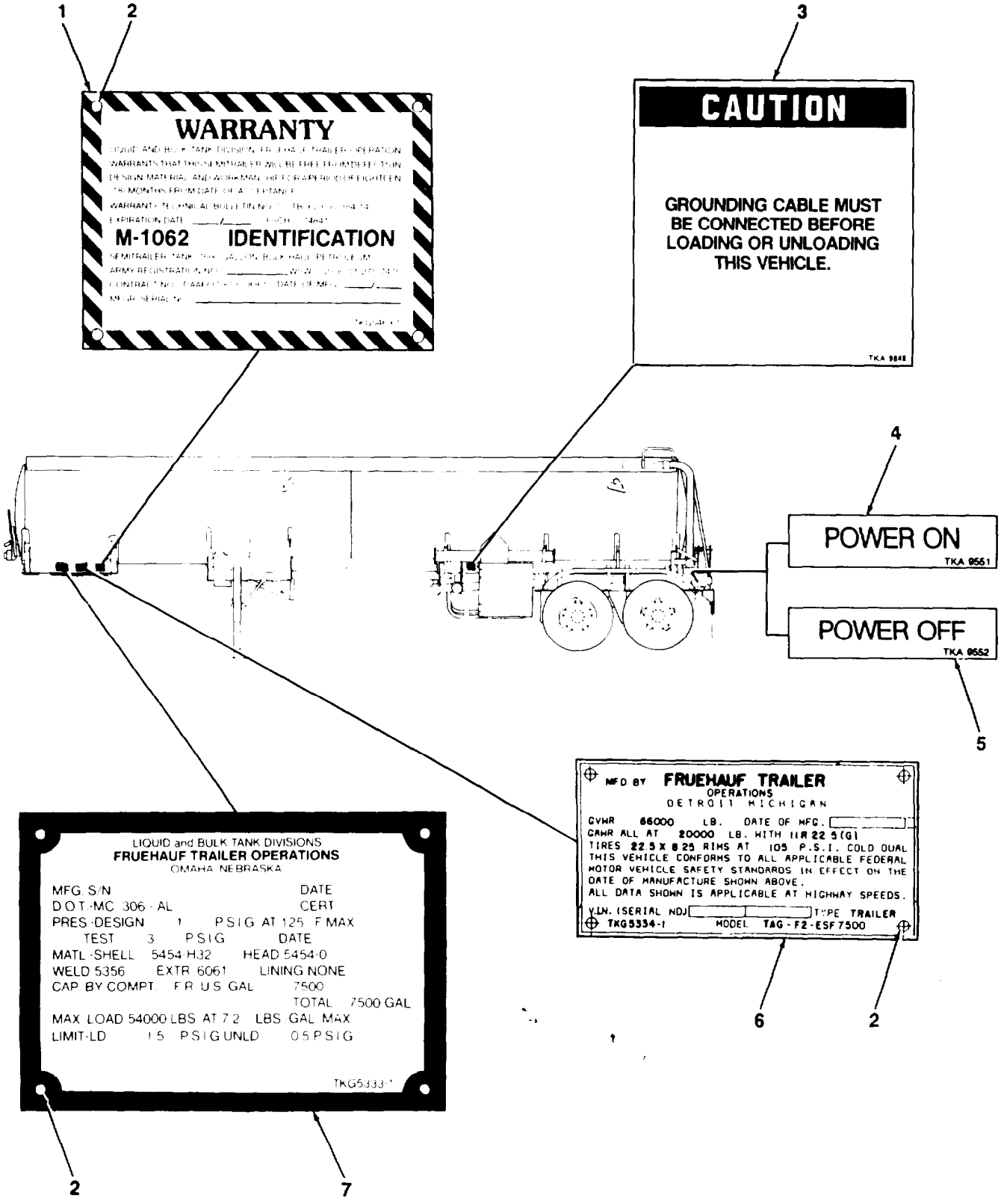

1
2
3
WARRANTY
M-1062 IDENTIFICATION
CAUTION
GROUNDING CABLE MUST BE CONNECTED BEFORE LOADING OR UNLOADING THIS VEHICLE.
TKA 9648
4
POWER ON
TKA 9551
POWER OFF
TKA 9552
5
MFD BY FRUEHAUF TRAILER OPERATIONS
DETROIT MICHIGAN
GVWR 66000 LB. DATE OF MFG.
GAWR ALL AT 20000 LB. WITH (11R 22.5(G)
TIRES 22.5 X 8.25 RIMS AT 105 P.S.I. COLD DUAL
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
ALL DATA SHOWN IS APPLICABLE AT HIGHWAY SPEEDS.
V.I.N. (SERIAL NO.) TYPE TRAILER
TKG5334-1 MODEL TAG-F2-ESF7500
6
2
LIQUID and BULK TANK DIVISIONS
FRUEHAUF TRAILER OPERATIONS
OMAHA NEBRASKA
MFG. S/N DATE
D.O.T.-MC 306 - AL CERT
PRES.-DESIGN 1 PSIG AT 125 F MAX
TEST 3 PSIG DATE
MATL.-SHELL 5454-H32 HEAD 5454-0
WELD 5356 EXTR 6061 LINING NONE
CAP. BY COMPT. FR U.S. GAL 7500
TOTAL 7500 GAL
MAX. LOAD 54000 LBS AT 7.2 LBS./GAL MAX
LIMIT-LD 15 PSIG UNLD 05 PSIG
TKG5333-1
2
7

Figure 38. Plates and Labels, Left Side.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 2210 DATA PLATES AND INSTRUCTION HOLDERS	
				FIG. 38 PLATES AND LABELS, LEFT SIDE	
1	PFOZZ	74841	TKG3469-1	PLATE, DESIGNATION	1
2	PAOZZ	74841	TKA6640	RIVET, BLIND	12
3	PAOZZ	74841	TKA9848	MARKER, IDENTIFICATI	1
4	PAOZZ	74841	TKA9551	MARKER, IDENTIFICATI	1
5	PAOZZ	74841	TKA9552	MARKER, IDENTIFICAT	1
6	PFOZZ	74841	TKG5334-1	PLATE, IDENTIFICATIO	1
7	PFOZZ	74841	TKG5333-1	PLATE, IDENTIFICATIO	1
				END OF FIGURE	

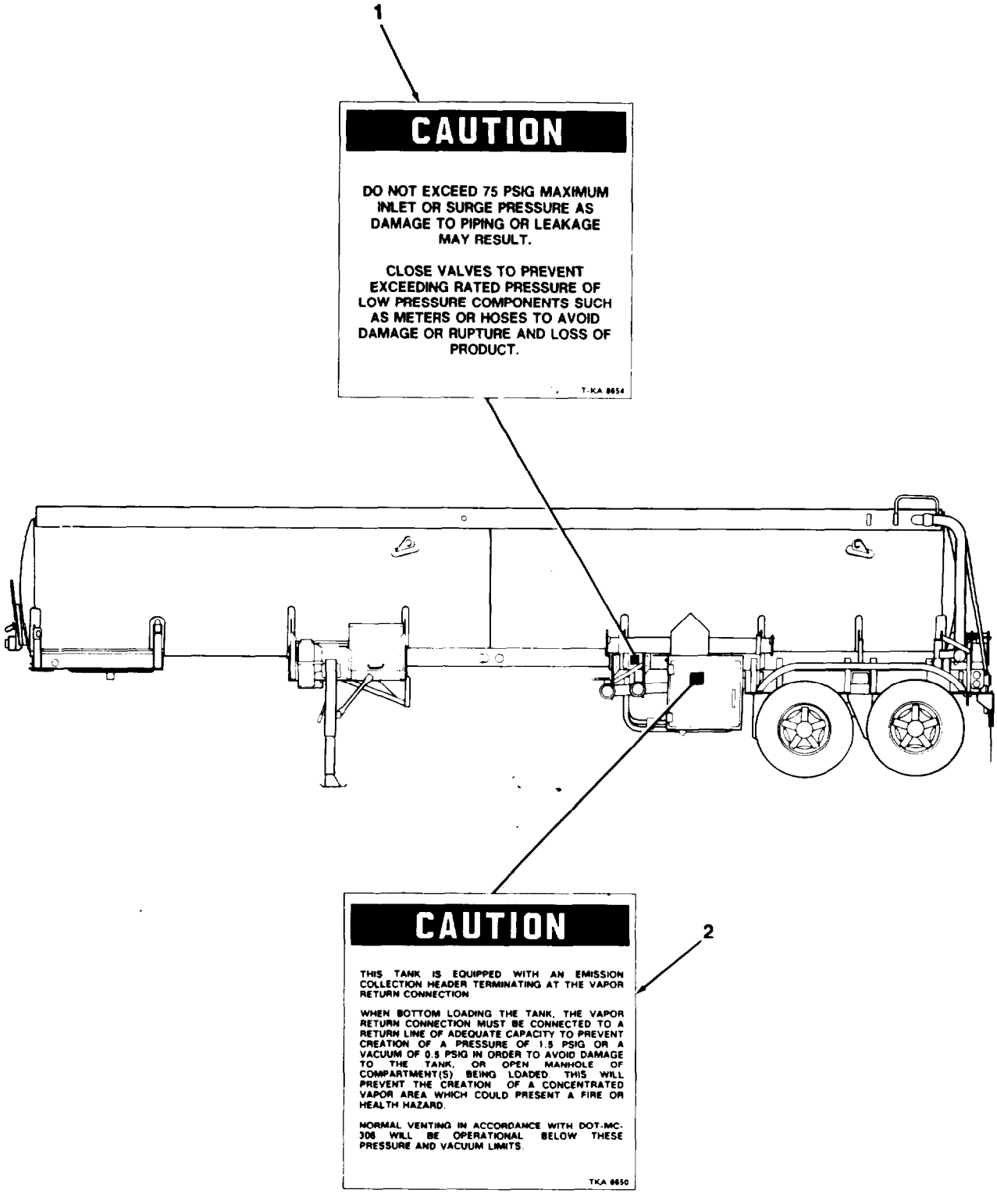

1
CAUTION
DO NOT EXCEED 75 PSIG MAXIMUM INLET OR SURGE PRESSURE AS DAMAGE TO PIPING OR LEAKAGE MAY RESULT.
CLOSE VALVES TO PREVENT EXCEEDING RATED PRESSURE OF LOW PRESSURE COMPONENTS SUCH AS METERS OR HOSES TO AVOID DAMAGE OR RUPTURE AND LOSS OF PRODUCT.
T-KA 8654
CAUTION
THIS TANK IS EQUIPPED WITH AN EMISSION COLLECTION HEADER TERMINATING AT THE VAPOR RETURN CONNECTION.
WHEN BOTTOM LOADING THE TANK, THE VAPOR RETURN CONNECTION MUST BE CONNECTED TO A RETURN LINE OF ADEQUATE CAPACITY TO PREVENT CREATION OF A PRESSURE OF 1.5 PSIG OR A VACUUM OF 0.5 PSIG IN ORDER TO AVOID DAMAGE TO THE TANK, OR OPEN MANHOLE OF COMPARTMENT(S) BEING LOADED. THIS WILL PREVENT THE CREATION OF A CONCENTRATED VAPOR AREA WHICH COULD PRESENT A FIRE OR HEALTH HAZARD.
NORMAL VENTING IN ACCORDANCE WITH DOT-MC-306 WILL BE OPERATIONAL BELOW THESE PRESSURE AND VACUUM LIMITS.
TKA 8650
2

Figure 39. Labels, Middle Left.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 2210 DATA PLATES AND INSTRUCTION HOLDERS	
				FIG. 39 LABELS, MIDDLE LEFT	
1	PAOZZ	74841	TKA8654	MARKER, IDENTIFICATI	1
2	PAOZZ	74841	TKA 8650	MARKER, IDENTIFICATI	1

END OF FIGURE

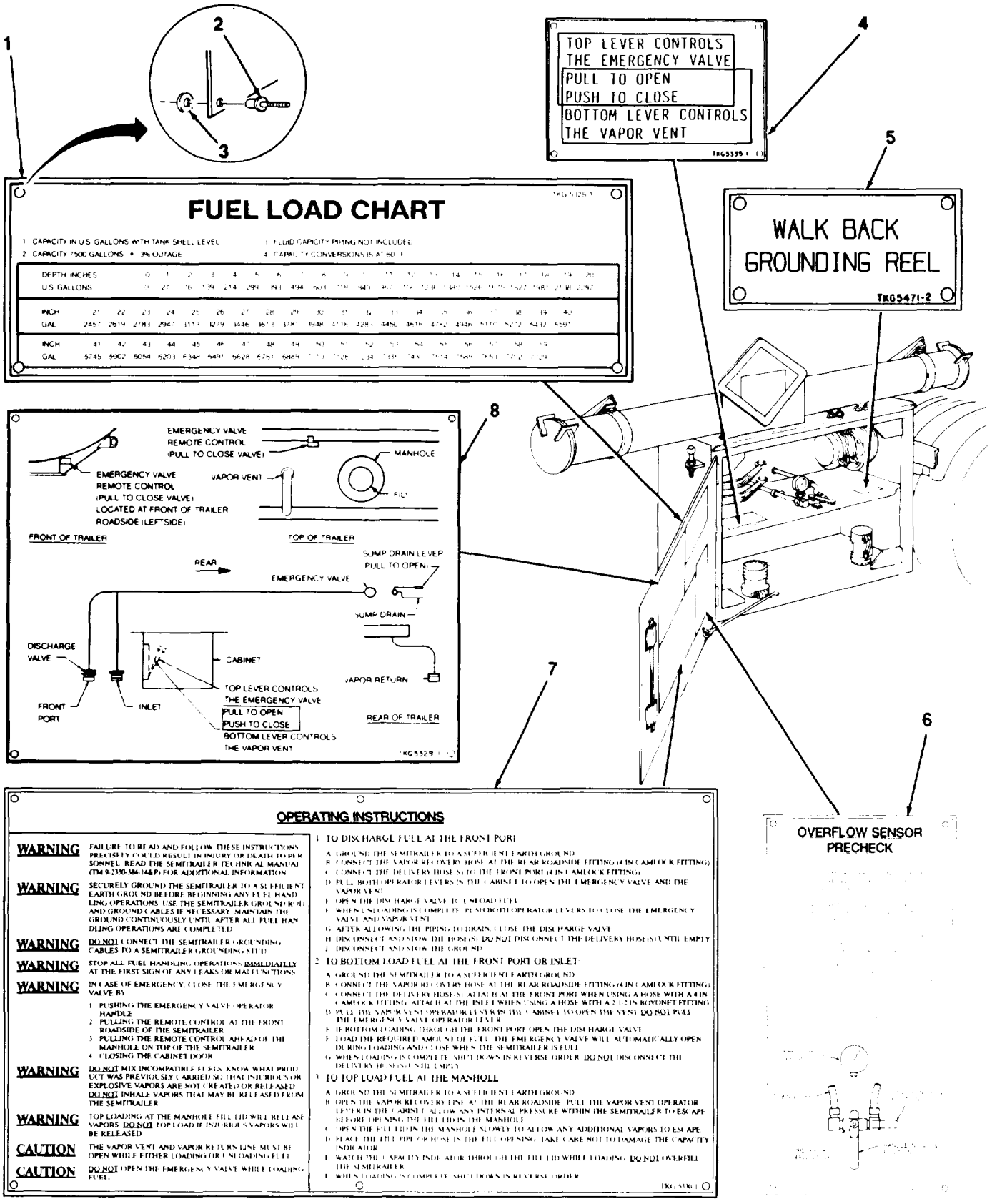


Figure 40. Plates, Inside Cabinet

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 2210 DATA PLATES AND INSTRUCTION HOLDERS	
				FIG. 40 PLATES, INSIDE CABINET	
1	PFOZZ	74841	TKG5328-1	PLATE, IDENTIFICATIO	1
2	PAOZZ	74841	TKG5332-1	RIVET, BLIND	18
3	PAOZZ	96906	MS27183-42	WASHER, FLAT	14
4	PFOZZ	74841	TKG5335-1	PLATE, INSTRUCTION	1
5	PAOZZ	74871	TKG54571-2	PLATE, WALK BACK	1
6	PAOZZ	74841	TKG5560-1	PLATE, PRECHECK	1
7	PFOZZ	74841	TKG5330-1	PLATE, INSTRUCTION	1
8	PFCZZ	74841	TKG5329-1	PLATE, INSTRUCTION	1
				END OF FIGURE	

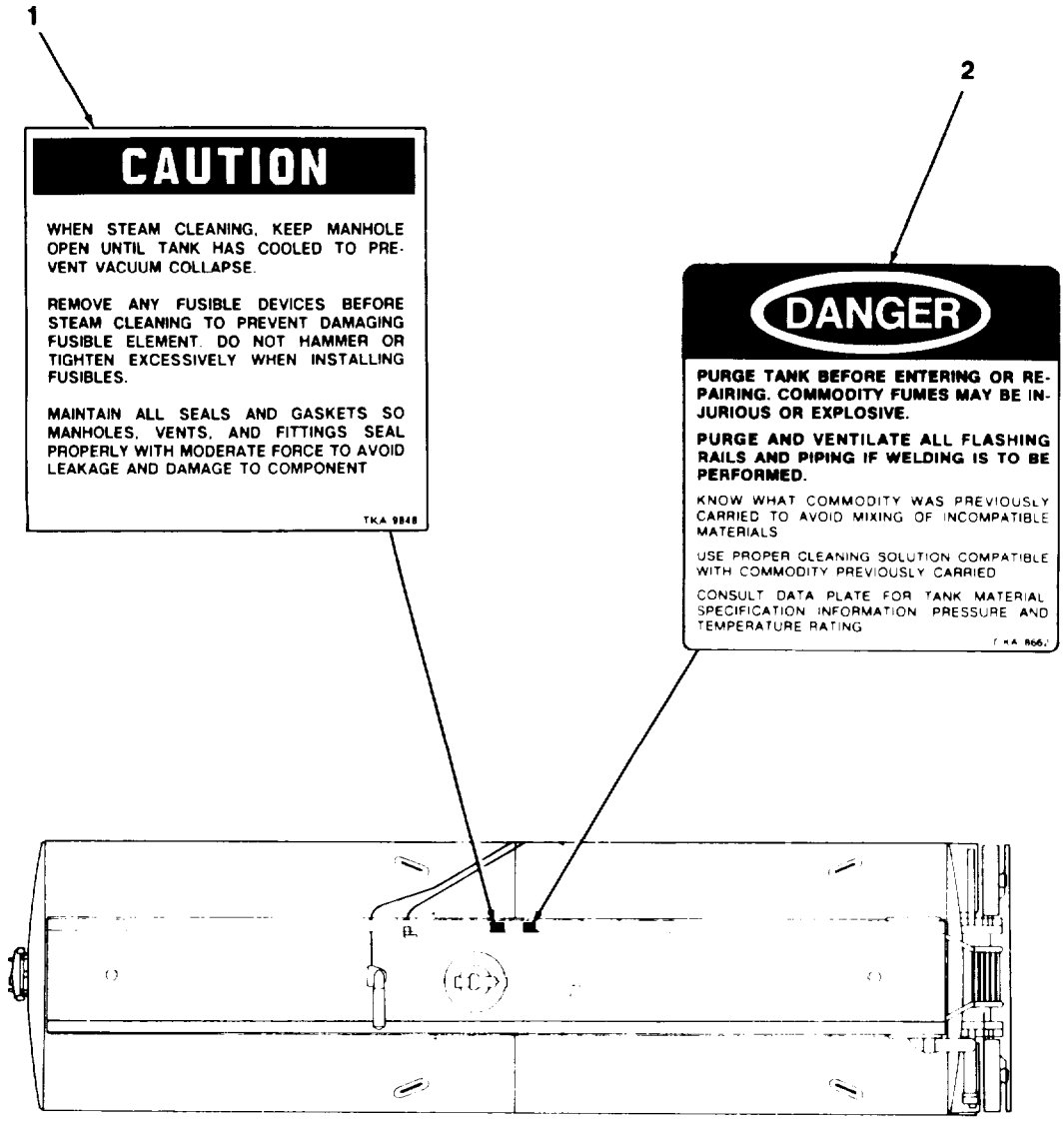

1
2
CAUTION
WHEN STEAM CLEANING, KEEP MANHOLE OPEN UNTIL TANK HAS COOLED TO PREVENT VACUUM COLLAPSE.
REMOVE ANY FUSIBLE DEVICES BEFORE STEAM CLEANING TO PREVENT DAMAGING FUSIBLE ELEMENT. DO NOT HAMMER OR TIGHTEN EXCESSIVELY WHEN INSTALLING FUSIBLES.
MAINTAIN ALL SEALS AND GASKETS SO MANHOLES, VENTS, AND FITTINGS SEAL PROPERLY WITH MODERATE FORCE TO AVOID LEAKAGE AND DAMAGE TO COMPONENT
TKA 9848
DANGER
PURGE TANK BEFORE ENTERING OR REPAIRING. COMMODITY FUMES MAY BE INJURIOUS OR EXPLOSIVE.
PURGE AND VENTILATE ALL FLASHING RAILS AND PIPING IF WELDING IS TO BE PERFORMED.
KNOW WHAT COMMODITY WAS PREVIOUSLY CARRIED TO AVOID MIXING OF INCOMPATIBLE MATERIALS
USE PROPER CLEANING SOLUTION COMPATIBLE WITH COMMODITY PREVIOUSLY CARRIED
CONSULT DATA PLATE FOR TANK MATERIAL SPECIFICATION INFORMATION PRESSURE AND TEMPERATURE RATING
TKA 8661

Figure 41. Labels, Top.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 2210 DATA PLATES AND INSTRUCTION HOLDERS	
				FIG. 41 LABELS, TOP	
1	PAOZZ	74841	TKA8657	MARKER,IDENTIFICATI.....	1
2	PAOZZ	74841	T-KA8662	MARKER,IDENTIFICATI.....	1

END OF FIGURE

1	2	37
2 thru 51	3 thru 36	38 thru 49

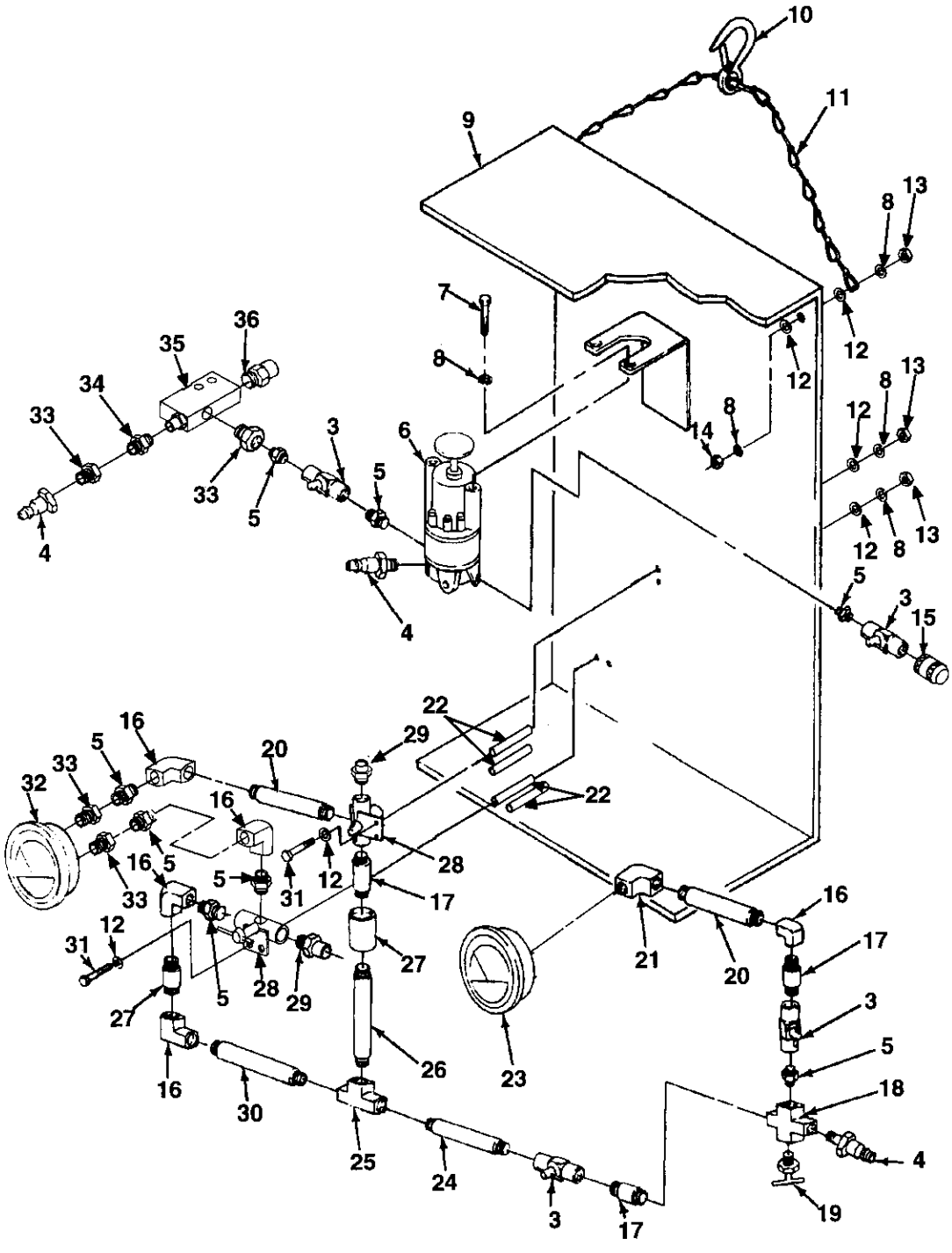


Figure 41A. Vapor Recovery Kit (sheet 1 of 3)

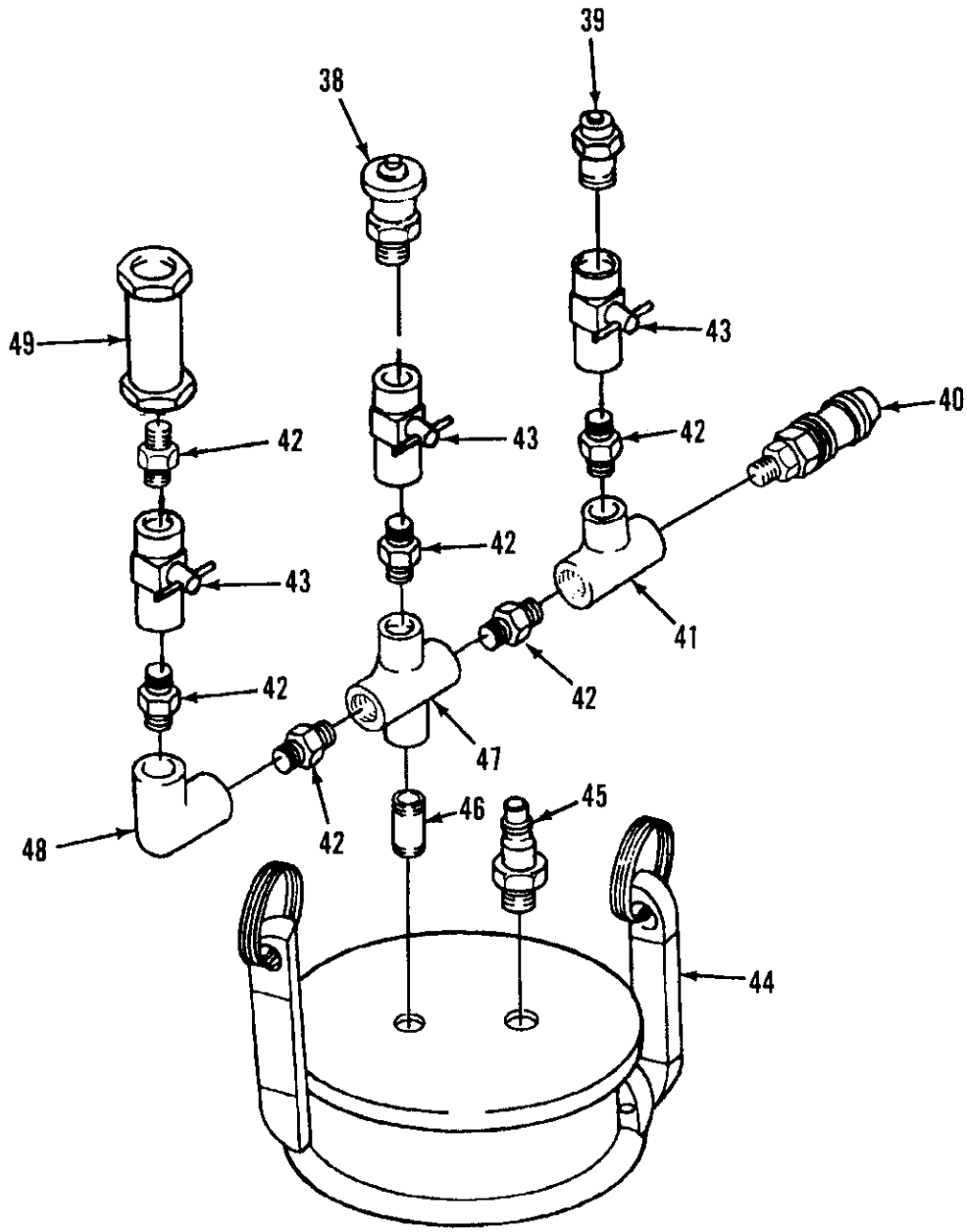


Figure 41A. Vapor Recovery Kit (sheet 2 of 3)

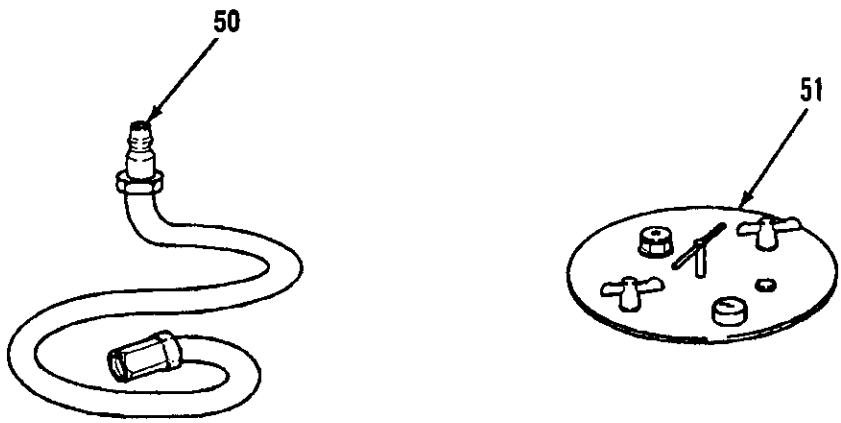


Figure 41A. Vapor Recovery Kit (sheet 3 of 3)

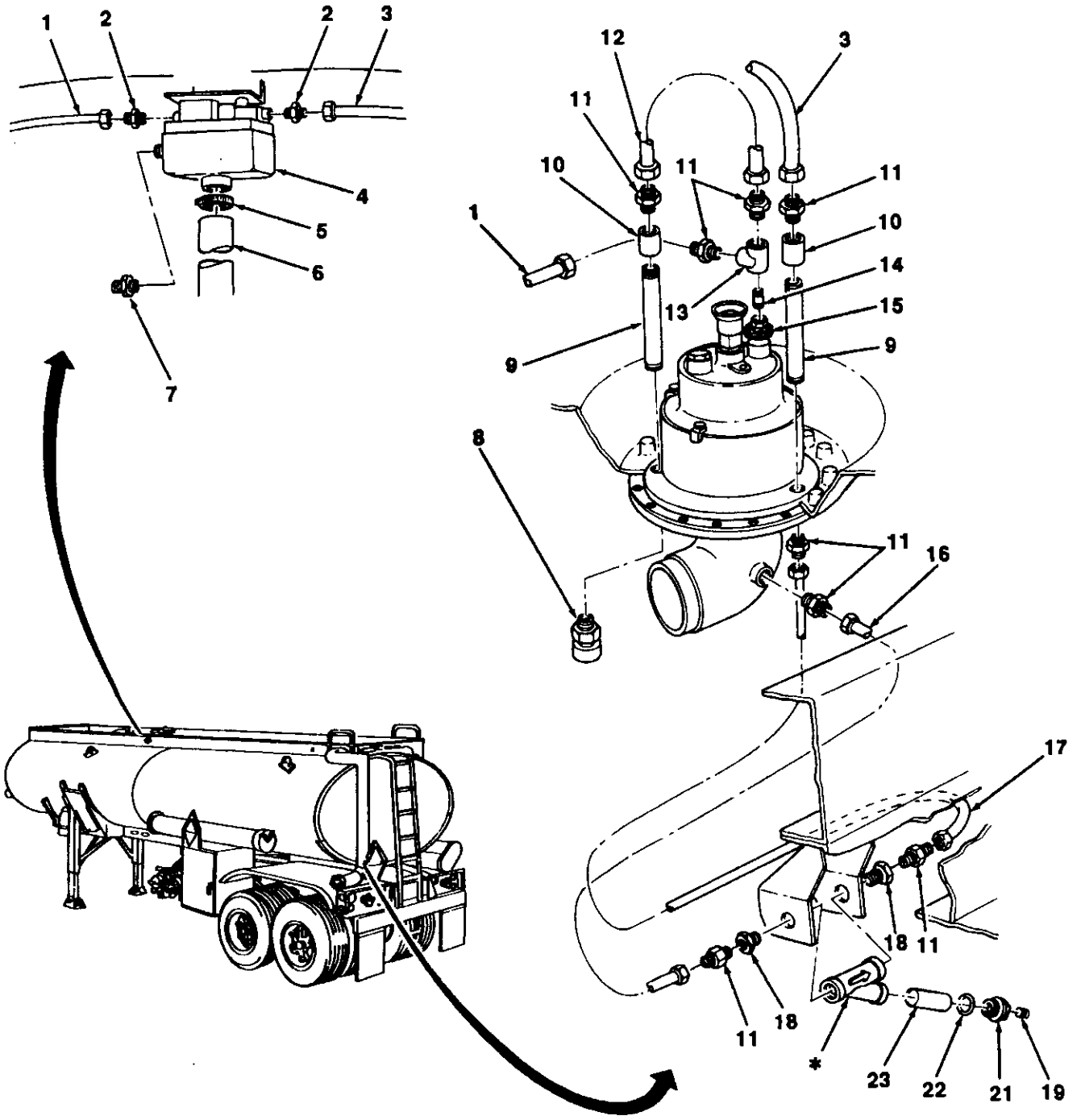
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITEM NO	SMR CODE	NSN	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
					GROUP 3307 SPECIAL PURPOSE KITS	
					FIG. 41A VAPOR RECOVERY KIT	
* 1	PFFFF	2590014388806	19207	57K3087	VAPOR RECOVERY TEST.....	1
* 2	PFFFF		19207	12461902	.ASSEMBLY,REGULATOR.....	1
* 3	PAFZA	4820000608608	91816	9559B-2PP	..VALVE,PLUG.....	4
* 4	PAFZZ		81349	M4109-09-08-00B	..COUPLING HALF,QUICK.....	3
* 5	PFFZZ		81343	4-4-130137BA	..NIPPLE.....	8
* 6	PFFZZ		07282	16222	..REGULATOR.....	1
* 7	PAFZZ	5305000680500	96906	MS90725-3	..SCREW,CAP,HEXAGON H.....	2
* 8	PAFZZ	5310005825965	96906	MS35338-44	..WASHER,LOCK.....	8
* 9	XAFZZ		19207	12461903	..STAND, WELDMENT.....	1
* 10	PAFZZ	5340011620430	75535	1023056	..SNAP HOOK.....	1
* 11	MFFZZ		16003	C43974-30.0	..CHAIN,WELDLESS MAKE FROM WELDLESS CHAIN, P/N C43974, 30 IN. LG.	1
* 12	PAFZZ	5310008238804	96906	MS27183-9	..WASHER,FLAT.....	14
* 13	PAFZZ	5305000712509	80204	B1821BH025C150N	..SCREW,CAP,HEXAGON H.....	2
* 14	PAFZZ	5310009050762	96906	MS51967-3	..NUT,PLAIN,HEXAGON.....	6
* 15	PFFZZ		81343	M4109-01-08-00B	..COUPLING HALF,PNUEM.....	1
* 16	PFFZZ		81343	4-4-130238BA	..ELBOW.....	5
* 17	PAFZZ	4730001932709	96906	MS51846-24	..NIPPLE,PIPE.....	4
* 18	PFFZZ		81343	4-4-4-4-130538BA	..CROSS.....	1
* 19	PFFZZ	4820007204488	30327	MS35782-2	..COCK,DRAIN.....	1
* 20	PFFZZ	4730001961974	96906	MS51846-30	..NIPPLE,PIPE.....	2
* 21	PFFZZ		81343	4-2-130239BA	..ELBOW.....	1
* 22	PFFZZ		19207	12461906	..STANDOFF.....	4
* 23	PFFZZ		85274	2205	..PRESSURE GAGE.....	1
* 24	PAFZZ	4730001961973	96906	MS51846-28	..NIPPLE,PIPE.....	1
* 25	PFFZZ		81343	4-4-4-130438BA	..TEE.....	1
* 26	PAFZZ	4730001961975	96906	MS51846-31	..NIPPLE,PIPE.....	1
* 27	PFFZZ		81343	4-4-140131	..PIPE ADAPTER,FEMALE.....	1
* 28	PAFZZ		93061	V406P-4	..VALVE, 3-WAY.....	2
* 29	PFFZZ		98441	EM-25	..MUFFLER,EXHAUST.....	2
* 30	PAFZZ	4730001961979	96906	MS51846-35	..NIPPLE,PIPE.....	1
* 31	PAFZZ	5305000712233	96906	MS90725-18	..SCREW,CAP,HEXAGON H.....	4
* 32	PAFZZ	6685008277495	85274	2020	..GAGE,DIFFERENTIAL,D.....	1
* 33	PFFZZ		81343	4-2-130139BA	..ADAPTER,REDUCING.....	4
* 34	PFFZZ		81343	2-2-130138	..COUPLING.....	1
* 35	XAFZZ		18887	AVR-093H	..TRANSDUCER, VACUUM.....	1
* 36	PAFZZ	4730013908073	98441	EM-12	..PNEUMATIC MUFFLER,E.....	1
* 37	XAFFF		19207	12461904	.COUPLING ASSEMBLY.....	1
* 38	PAFZF	4820012717889	91816	D559B-2M-6	..VALVE,SAFETY RELIEF.....	1
* 39	PAFZZ		91816	D559B-2M-1	..VALVE, PRESSURE REL.....	1
* 40	PFFZZ		81343	M4109-01-08-00B	..COUPLING HALF,PNUEM.....	1
* 41	PFFZZ		81343	4-4-4-140338BA	..TEE.....	1
* 42	PFFZZ		81343	4-4-140137BA	..NIPPLE.....	6
* 43	PAFZA	4820000608608	91816	9559B-2PP	..VALVE,PLUG.....	3
* 44	PFFZZ		19207	12468902	..COUPLING.....	1
* 45	PAFZZ		81349	M4109-09-08-00B	..COUPLING HALF,QUICK.....	1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
* 46	PAFZZ	4730001932709	96906	MS51846-24	..NIPPLE,PIPE.....	1
* 47	PFFZZ		81343	4-4-4-4-140538BA	..CROSS.....	1
* 48	PFFZZ		81343	4-4-140238BA	..ELBOW.....	1
* 49	PAFZZ		91816	259B-2PP.5	..VALVE, CHECK.....	1
* 50	PAFZZ		19207	12461908	.HOSE ASSEMBLY.....	2
* 51	PFFZZ		19207	12461893	.PAF TEST PLATE.....	1

END OF FIGURE

20

21 THRU 23



* Part of Item 20

Figure 42. Jet Level Sensor, Lines, and Related Hardware.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 47 GAGES (NONELECTRICAL). WEIGHING AND MEASURING DEVICES	
				GROUP: 4702 GAGES, MOUNTINGS, LINES, AND FITTINGS	
				FIG. 42 JET LEVEL SENSOR, LINES, AND RELATED HARDWARE	
1	MOOZZ	74841	STK40090-15	TUBING,NYLON (34.5FT.LG.) MAKE FROM P/N STK40090	1
2	PAOZZ	93061	68NTA-6-4	ADAPTER,STRAIGHT,PI	2
3	MOOZZ	74841	STK40090-16	TUBING,NYLON (34.5FT.LG.) MAKE FROM P/N STK40090	1
4	PAFZZ	64548	F613D	SWITCH, PROXIMITY	1
5	PAFZZ	96906	MS35842-11	CLAMP,HOSE	1
6	MFFZZ	74841	TKG5304-1-1	TUBING,NEOPRENE (4.0 FT. LG.) MAKE FROM P/N TKG5304-1	1
7	PAOZZ	93061	68NTA-8-4	ADAPTER,STRATGHT,PI	1
8	PAFZZ	74841	TKG5459-1	VALVE,SADDLE	1
9	PAFZZ	75364	TKG0510-13	NIPPLE,PIPE	2
10	PAFZZ	75364	VKA7792	COUPLING,PIPE	2
11	PAFZZ	93061	68NTA-6-6	ADAPTER,STPAIGHT.PI	8
12	MOOZZ	74841	STK40090-13	TUBING, NYLON (1.166FT,LG.)MAKE FROM P/N STK40090	1
13	PAFZZ	81343	6-6-6130438B	TEE, PIPE	1
14	PAFZZ	56161	10503176	BUSING,PIPE	1
15	PAFZZ	96906	MS51846-1	NIPPLE,PIPE	1
16	MOOZZ	74841	STK40090-11	TUBING (1.66FT.LG.(MAKE FROM P/N STK40090	1
17	MOOZZ	74841	STK40090-12	TUBING (2.833FT.LG.)MAKE FROM P/N STK40090	1
18	PAOZZ	93061	209P12-6	BUSHING,PIPE	2
19	PAOZZ	96906	MS14314-2X	PLUG,PIPE	1
20	PAOOO	32869	24388A3-4IN	STRAINER,STYLE F	1
21	PAOZZ	32869	24388ACAP3-4IN	•CAP,BRONZE	1
22	PAOZZ	32869	24388AGSKT3-4IN	•GASKET,COPPER	1
23	PAOZZ	32869	24388ASCRN3-4IN	•SCREEN,BRASS	1

END OF FIGURE

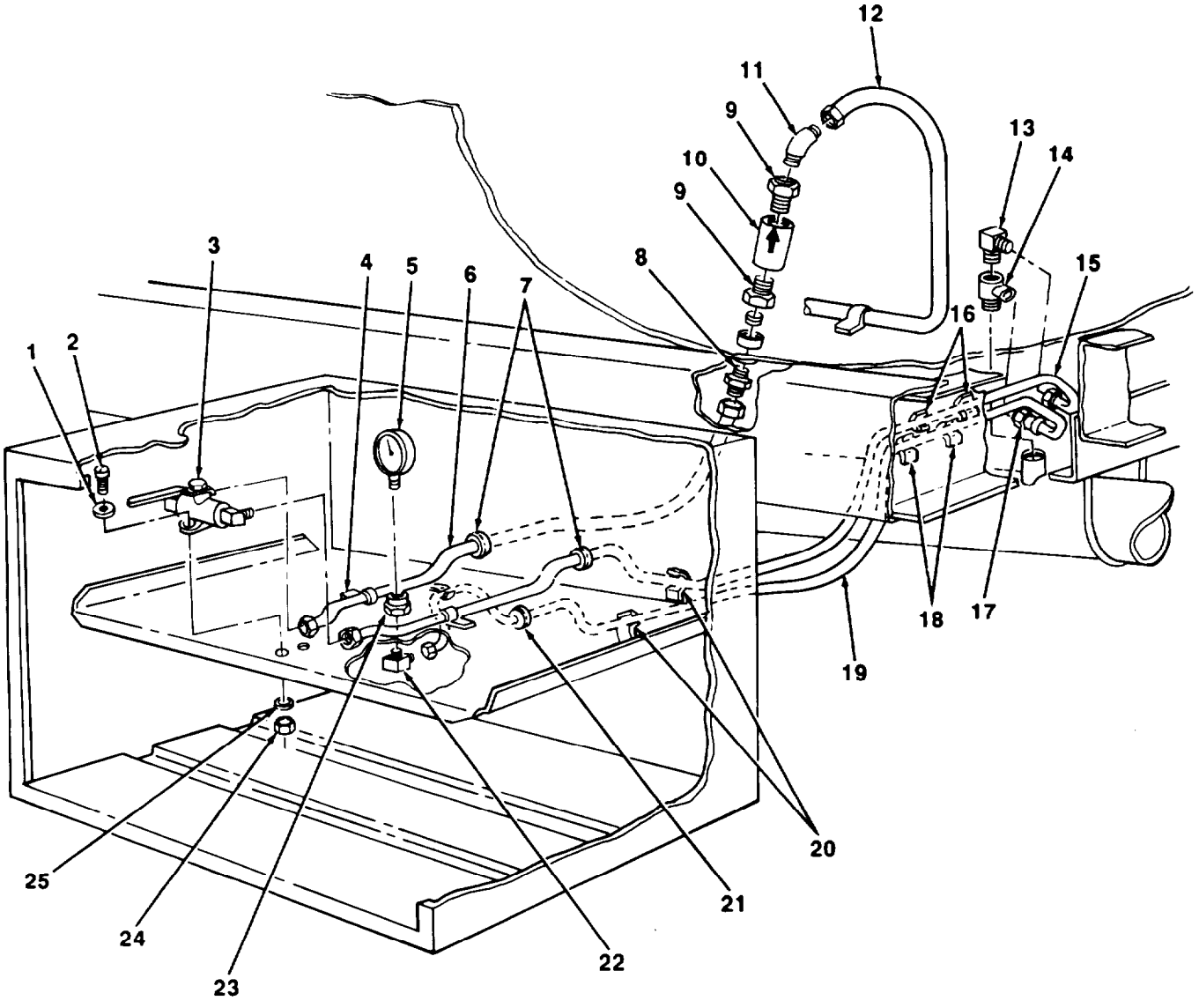


Figure 43. Jet Level Sensor Precheck Component Parts.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP: 4702 GAGES, MOUNTINGS, LINES, AND FITTINGS	
					FIG. 43 JET LEVEL SENSOR PRECHECK COMPONENT PARTS	
* 1	PAOZZ	5310000145850	45152	1379HX1	WASHER,FLAT	2
2	PAOZZ	5305002400194	96906	MS51849-76	SCREW,MACHINE	2
* 3	PAOZZ	4820013178235	74841	TKG5548-1	VALVE,BALL	1
4	PFFZZ	5340012915200	74841	TKG0149-2	STRAP,RETAINING	2
* 5	PAOZZ	6685013204820	5J172	TKG5504-1	GAGE,PRESSURE,DIAL	1
6	MOOZZ		74841	STK40109-8	TUBING,NYLON (3.0FT.LG.)MAKE FROM P/N STK40109	1
* 7	PAOZZ	5325013182076	74841	FSP11-1-14	GROMMET,NONMETALLIC	2
8	PAOZZ	4730010918032	93061	68NTA-8-6	ADAPTER,STRAIGHT,PI	1
* 9	PAOZZ	4730001960936	21450	115224	BUSHING,PIPE	2
* 10	XDOZZ		12145	C750B	VALVE,CHECK	1
11	PAOZZ	4730010912809	93061	279NTA-8-6	ELBOW,PIPE TO TUBE	1
12	MOOZZ		74841	STK40109-7	TUBING,NYLON (25.5FT.LG.)MAKE FROM P/N STK40109	1
13	PAOZZ	4730011156643	93061	269NTA-8-8	ELBOW,PIPE TO TUBE	3
14	PAOZZ	4730010952034	93061	2225P-8	TEE,PIPE	1
15	MOOZZ		74841	STK40109-9	TUBING,NYLON (5.1FT.LG.)MAKE FROM P/N STK40109	1
16	PFFZZ	5340012919213	74841	TKG0149-3	CLIP,SPRING TENSION	2
17	PAOZZ	4730010969127	93061	68NTA-6-8	ADAPTER,STRAIGHT,PI	1
18	PFFZZ	5340012915199	74841	TKG0149-4	STRAP,RETAINING	2
19	MOOZZ		74841	STK40090-14	TUBING,NYLON (5.0FT.LG.)MAKE FROM P/N STK40090	1
20	PFFZZ	5340012908670	74841	TKG0149-1	STRAP,RETAINING	3
* 21	PAOZZ	5325013182077	74841	FSP11-1-18	GROMMET,NONMETALLIC	1
22	PAOZZ	4730000691187	93061	269NTA-6-4	ELBOW,PIPE TO TUBE	1
23	PAOZZ	4730009191803	79470	W05465	COUPLING,PIPE	1
24	PAOZZ	5310009349758	96906	MS35649-202	NUT,PLAIN,HEXAGON	2
* 25	PAOZZ	5310000453296	83298	B20500-11	WASHER,LOCK	2
					END OF FIGURE	

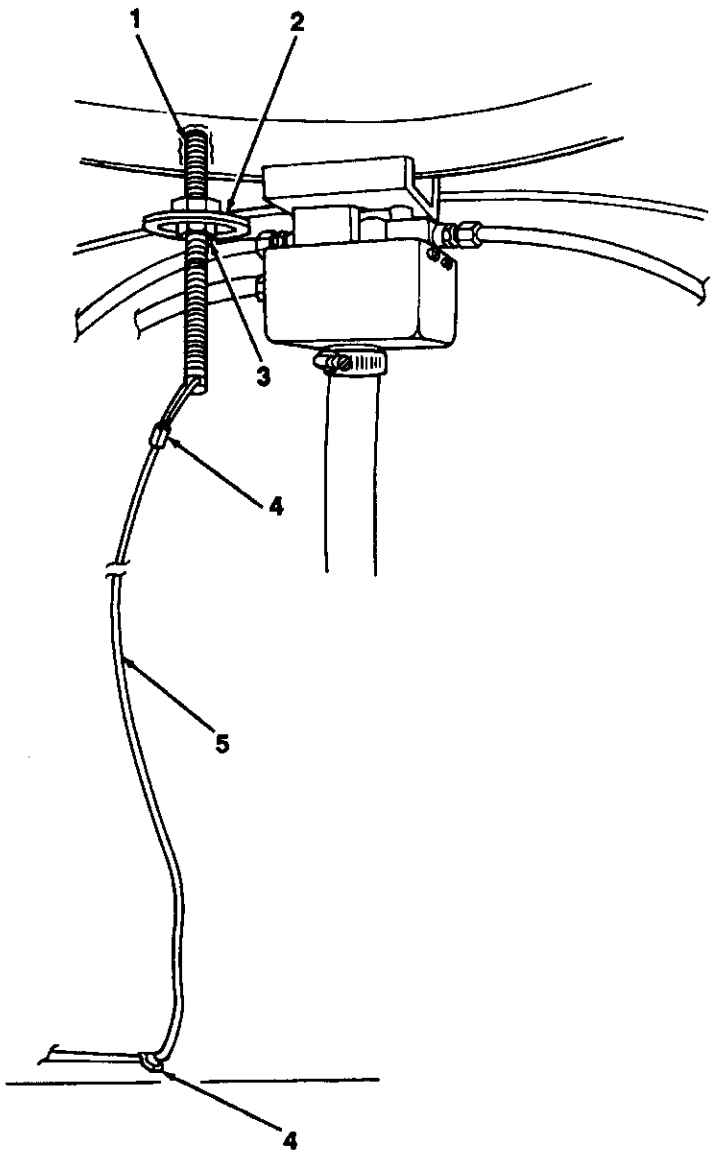


Figure 44. Gage Marker Rod and Components.

(1) ITEM NO	(2) SMA CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 4702 GAGES, MOUNTINGS, LINES, AND FITTINGS	
				FIG. 44 GAGE MARKER ROD AND COMPONENTS	
1	PAFZZ	74841	TKG5I53-1	STUD, CONTINUOUS THR	1
2	PAOZZ	74841	TKA1003	DISK,VALVE	1
3	PAOZZ	96906	MS35691-33	NUT,PLAIN,HEXAGON	1
4	PAOZZ	04898	VKA8994	CONDUIT,METAL,FLEXI	2
5	MFOZZ	19207	7668272	ROPE,WIRE (6FT LONG) MAKE FROM P/N VKA8995	6
				END OF FIGURE	

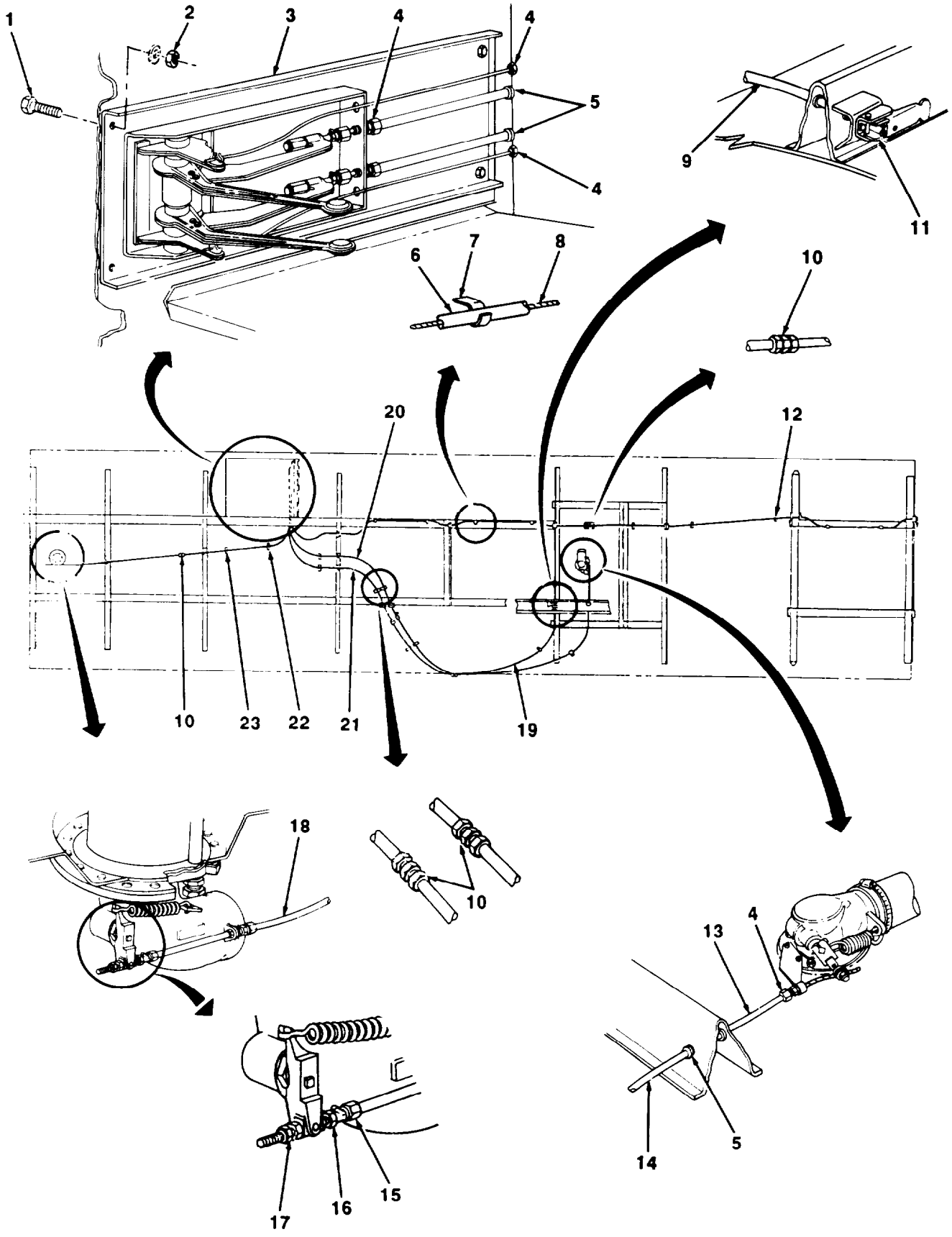


Figure 45. Emergency Valve Control Lines and Component Parts.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 72 DISPENSING AND SERVICING EQUIPMENT COMPONENTS	
				GROUP: 7203 VALVES, FITTINGS, LINES	
				FIG. 45 EMERGENCY VALVE CONTROL LINES AND COMPONENT PARTS	
1	PAOZZ	97403	13222E0109	SCREW ROLLER ASSEMB	4
2	PAFZZ	96906	M51943-35	NUT,SELF-LOCKING.HE	4
3	PBOZZ	74841	TKG5276-1	VALVE,REGULATING,FL	1
4	PAOZZ	21439	52C3861-3	ADAPTER,STRAIGHT,PI	8
5	PAOZZ	23705	FSP11-1-3	GROMMET,NONMETALLIC	1
6	MOOZZ	74841	LKA3342-3	TUBING (11.42 FT LG) MAKE FROM P/N STBW	1
7	PFFZZ	74841	TKG0149-4	STRAP, RETAINING	24
8	MOOZZ	74841	VKA0583-2	CABLE (26.5 FT LG) MAKE FROM P/N MILW83420 TYPE-A1/801A7X19	1
9	MOOZZ	74841	LKA3342-6	TUBING (11 FT LG) MAKE FROM P/N STBW	1
10	PAOZZ	74841	VKA3849	UNION,TUBE	4
11	PAOZZ	05443	20032-A	RELAY-SWITCH	2
12	MOOZZ	74841	LKA3342-4	TUBING (12.42 FT LG) MAKE FROM P/N STBW	1
13	MOOZZ	74841	LKA3342-8	TUBING (12 FT LG) MAKE FROM P/N STBW	1
14	MOOZZ	74841	VKA0583-4	CABLE (21.6 FT LG) MAKE FROM P/N MILW83420TYPEI-A1/8D147X19	1
15	PAOZZ	05443	10268-A	NUT,SELF-LOCKING,RO	1
16	PAOZZ	96906	MS51967-5	NUT,PLAIN,HEXAGON	2
17	PAOZZ	05443	20040-A	THUMBSCREW	1
18	MOOZZ	74841	LKA3342-1	TUBING (5.67 FT. LG.) MAKE FROM P/N STBW	1
19	MOOZZ	74841	VKA0583-3	CABLE (21 FT LG) MAKE FROM P/N MILW83420TYPE1-A1/8D1DIA7X19	1
20	MOOZZ	74841	LKA3342-7	TUBING (8.5 FT LG) MAKE FROM P/N STBW	1
21	MOOZZ	74841	LKA3342-5	TUBING (8 FT LG) MAKE FROM P/N STBW	1
22	MOOZZ	74841	VKA0583-1	CABLE (14 FT LG) MAKE FROM P/N MILW83420TYPEI-A1/8D1A7X19	1
23	MOOZZ	74841	LKA3342-2	TUBING (6 FT LG) MAKE FROM P/N STBW	1

END OF FIGURE

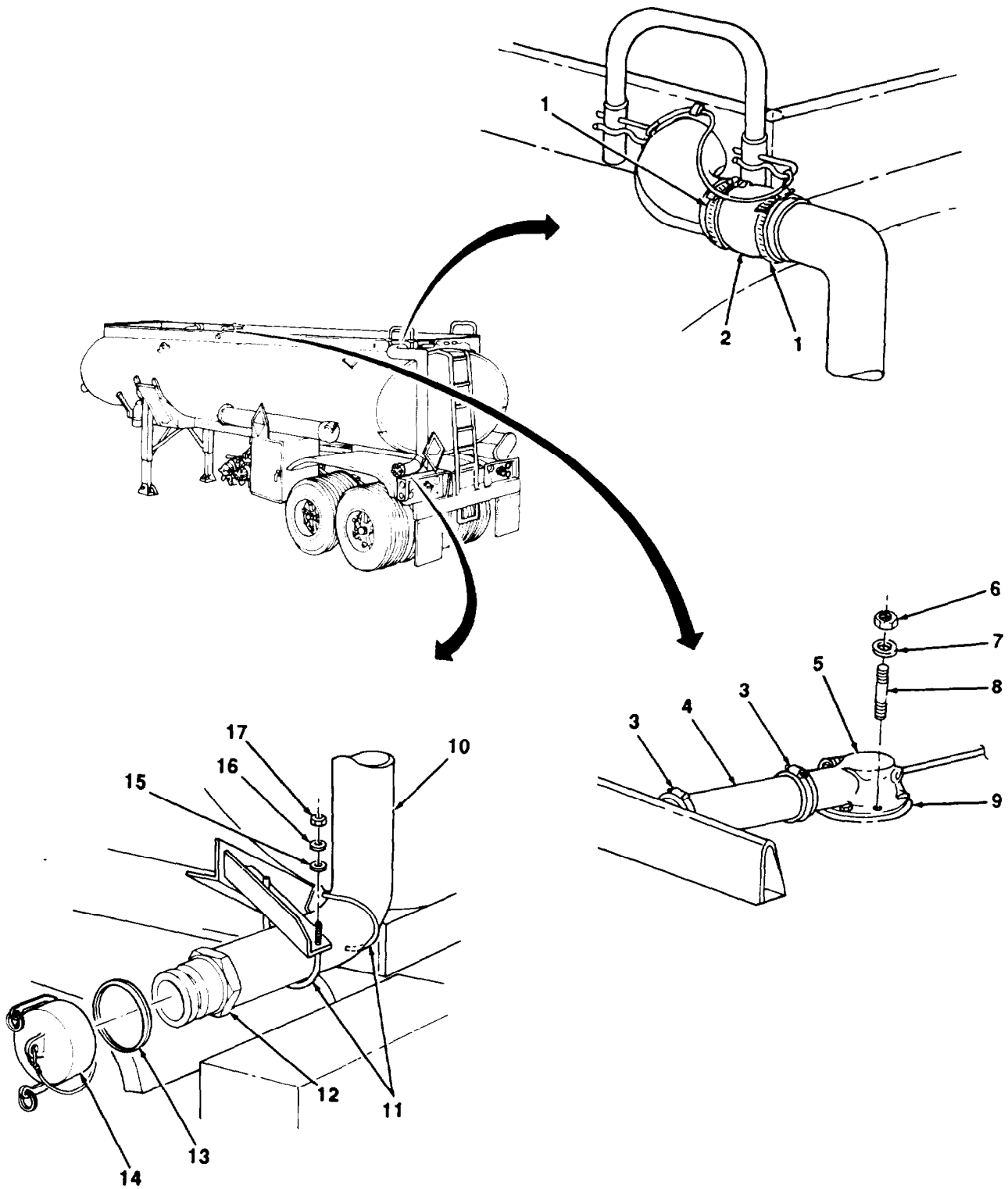


Figure 46. Vapor Collection and Component Parts.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 7203 VALVES, FITTINGS, LINES	
				FIG. 46 VAPOR COLLECTION AND COMPONENT PARTS	
1	PAOZZ	81646	6880	STRAP,RETAINING	2
2	PAOZZ	74841	TKG5300-1	HOSE,NONMETALLIC	1
3	PAOZZ	81646	5456	CLAMP,LOOP	2
4	PAOZZ	74841	TKG5301-1	HOSE,NONMETALLIC	1
5	PAOZZ	13226	4626-9AL	COVER,VENTILATORY	1
6	PAOZZ	13226	9Q5805	NUT, PLAIN, HEXAGON	4
7	PAOZZ	13226	9Q5847	WASHER,FLAT	4
8	PAOZZ	13226	18626-FL	STUD,PLAIN	4
9	PAOZZ	81349	M83248/1-245	PACKING,PREFORMED	1
10	PAOZZ	74841	TKG5299-1	HOSE,METALLIC	1
11	PAOZZ	7V618	TKA7199	BOLT,U	2
12	PAOZZ	96906	MS27020-17	COUPLING HALF, QUICK	1
13	PAOZZ	96906	MS27030-9	GASKET	1
14	PAOZZ	74841	VKA0619	CAP, PROTECTIVE, DUST	1
15	PAOZZ	96906	MS27183-18	WASHER, FLAT	4
16	PAOZZ	01276	210104-85	WASHER, LOCK	4
17	PAOZZ	29930	120378	NUT, PLAIN, HEXAGON	4
				END OF FIGURE	

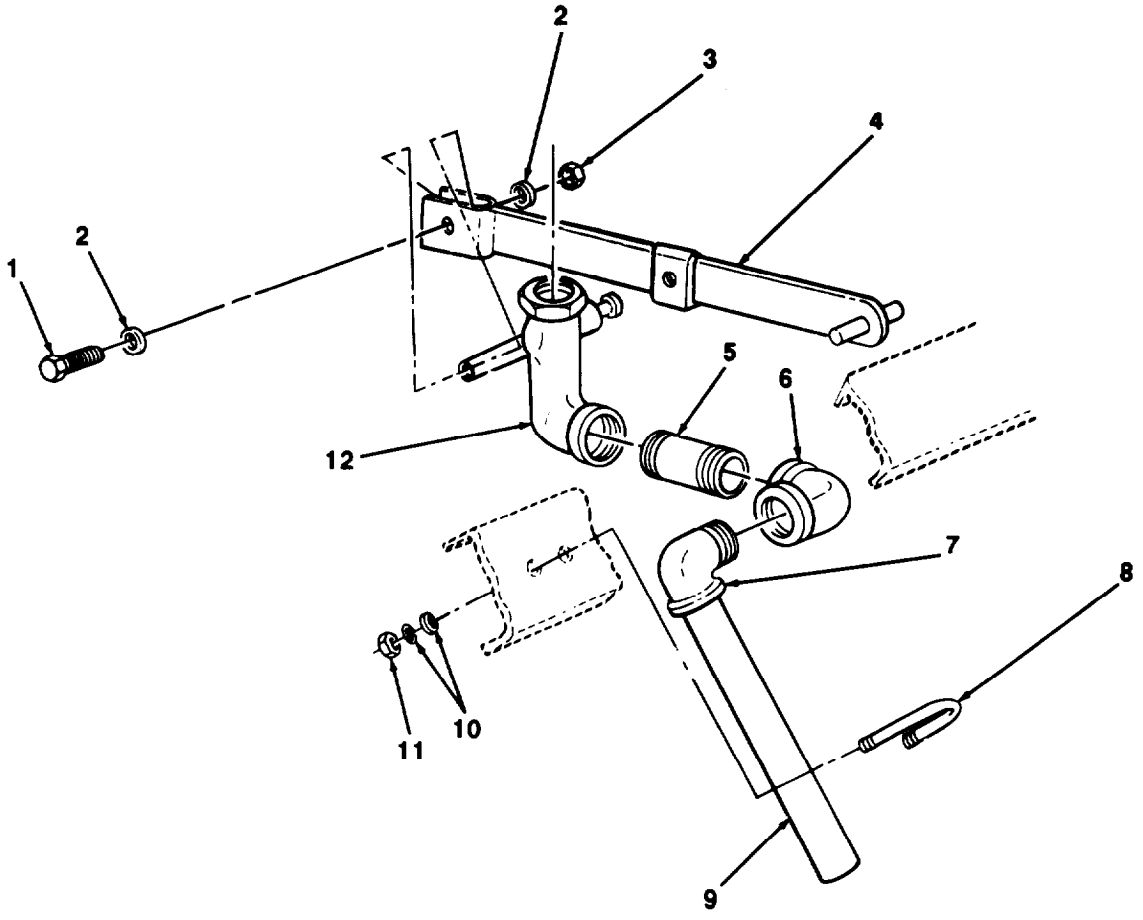


Figure 47. Sump Drain and Components.

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP: 7203 VALVES, FITTINGS, LINES	
					FIG. 47 SUMP DRAIN AND COMPONENTS	
* 1	PAOZZ	5305000712070	80204	B1821BH050C175N	SCREW,CAP,HEXAGON H.....	1
2	PAOZZ	5310008095998	96906	MS27183-18	WASHER,FLAT.....	2
3	PAOZZ	5310007680318	21439	01857-007	NUT,PLAIN,HEXAGON.....	1
4	PAOZZ	3040012905025	74841	TKG5274-1	LEVER,MANUAL CONTRO.....	1
5	PAOZZ	4730012899555	74841	TKG5277-1	NIPPLE,PIPE.....	1
6	PAOZZ	4730012899533	74841	VKA1043	ELBOW,PIPE.....	1
7	PAOZZ	4730012899534	74841	VKA1081	ELBOW,PIPE.....	1
8	PAOZZ	5306012897826	74841	VKA7882	BOLT,U.....	1
9	PAOZZ	4710012909139	74841	TKG5193-1	PIPE,METALLIC.....	1
10	PAOZZ	5310004079566	96906	MS35338-45	WASHER,LOCK.....	2
11	PAOZZ	5310008807744	96906	MS51967-5	NUT,PLAIN,HEXAGON.....	2
12	PAOZZ	4820012903414	74841	TKG5045-1	COCK,DRAIN.....	1
					END OF FIGURE	

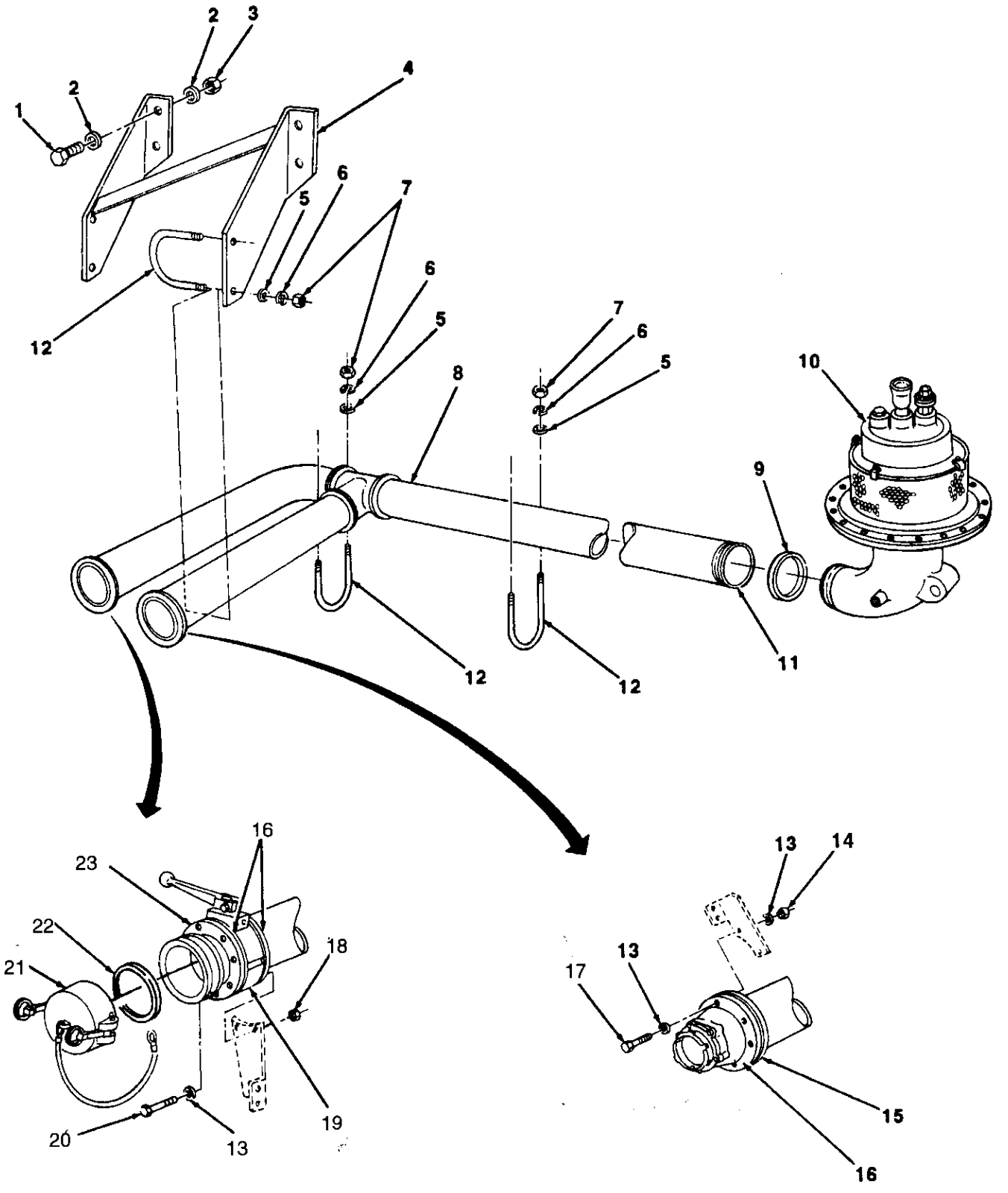


Figure 48. Loading and Discharge Tube.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 7203 VALVES, FITTINGS, LINES	
				FIG. 48 LOADING AND DISCHARGE TUBE	
1	PAOZZ	96906	MS90727-164	SCREW,CAP,HEXAGON H	4
2	PAOZZ	62793	104J005-28	WASHER,FLAT	8
3	PAOZZ	96906	MS51943-44	NUT,SELF-LOCKING,HE	4
4	PAOZZ	74841	TKG5192-1	BRACKET,ANGLE	1
5	PAOZZ	96906	MS27183-18	WASHER,FLAT	8
6	PAOZZ	01276	2I0104-8S	WASHER,LOCK	8
7	PAOZZ	29930	120378	NUT,PLAIN,HEXAGON	8
8	PFOZZ	74841	TKG5169-1	PIPEASSEMBLY,METAL	1
9	PAOZZ	79154	75-4 1/2	COUPLING,CLAMP,PIPE	1
10	PBOFF	64548	F635AD	VALVE,REGULATING,FL FOR COMPONENT PARTS SEE FIG. 49 AND 50	1
11	PAOZZ	79154	M-2	GASKET	1
12	PAOZZ	7V618	TKA7199	BOLT,U	4
13	PAOZZ	96906	MS27183-14	WASHER,FLAT	32
14	PAOZZ	96906	MS51943-35	NUT,SELF-LCCKING,HE	8
15	PAOZZ	64548	F445	COUPLING,PIPE	1
16	PAOZZ	14323	VKA1514	GASKET	3
17	PAOZZ	96906	MS90728-64	SCREW,CAP,HEXAGON	8
18	PAOZZ	96906	MS51967-8	NUT,PLAIN,HEXAGON	8
19	PBOZZ	13226	WD401-AL-V	VALVE ,GATE	1
20	PAOZZ	96906	MS90728-70	SCREW, CAP,HEXAGON H	8
21	PAOZZ	96906	MS27028-17	CAP,QUICK DISCONNEC	1
22	PAOZZ	96906	MS27030-9	GASKET	1
23	PAOZZ	74841	TKG5067-1	ADAPTER,STRAIGHT,FL	1

END Of FIGURE

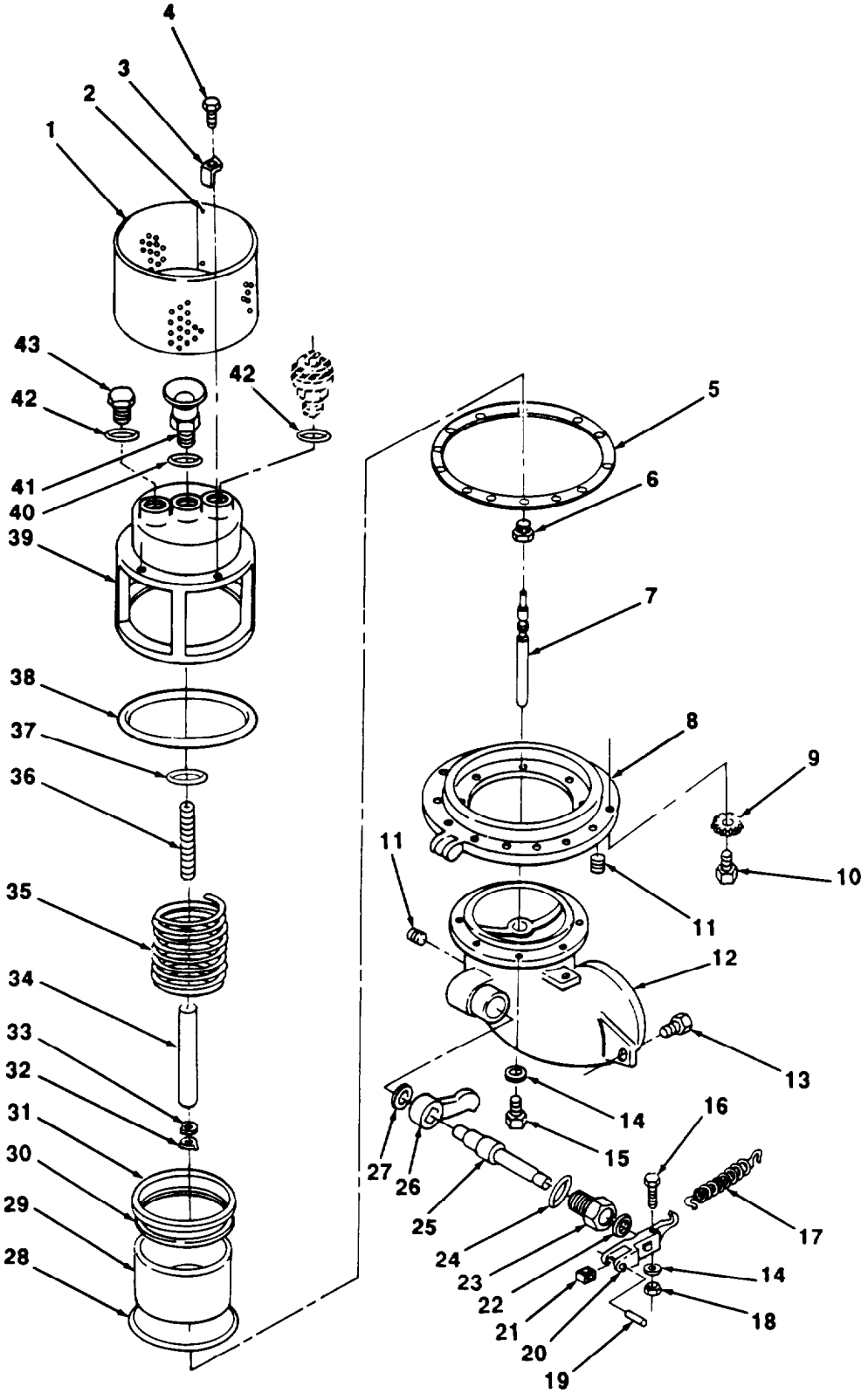


Figure 49. Bottom Load Valve Assembly.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES (UOC)	(6) QTY
				GROUP: 7203 VALVES, F FITTINGS, LINES	
				FIG. 49 BOTTOM LOAD VALVE ASSEMBLY	
1	PAFZZ	64548	4051-17	SCREEN, VALVE	1
2	PAFZZ	96906	MS20470A4-4	RIVET,SOLID	2
3	PAFZZ	64548	4051-13	RETAINER, VALVE	4
4	PAFZZ	64548	3706000-518-12	SCREW, MACHINE	4
5	PAFZZ	64548	4021S2M3	GASKET	1
6	PAFZZ	64548	2712519	NUT	1
7	PAFZZ	16069	2712520	ROD, METERING BRASS	1
8	PAFZZ	64548	4051-8	PLATE	1
9	PAOZZ	96906	MS35338-41	WASHER, LOCK	16
10	PAOZZ	96906	MS90725-34	BOLT, MACHINE	16
11	PAFZZ	96906	MS27769-4	PLUG, PIPE	2
12	PAFZZ	64548	2712515	ELBOW, FLANGE TO TUB	1
13	PAFZZ	64548	2721205-1	BUSHING, MACHINE THR	1
14	PAFZZ	96906	MS35333-41	WASHER, LOCK	25
15	PAFZZ	96906	MS90725-34	BOLT, MACHINE	16
16	PAFZZ	96906	MS90728-38	BOLT, MACHINE	25
17	PAFZZ	64548	4051-7-5	SPRING	1
18	PAFZZ	96906	MS35649-2312	NUT, PLAIN, HEXAGON	1
19	PAFZZ	96906	MS171656	PIN, SPRING	1
20	PAFZZ	64548	2712518	LEVER	1
21	PAFZZ	64548	2712524-1	CONNECTING LINK, RIG	1
22	PAFZZ	64548	860062-N517-8	PACKING, PREFORMED	1
23	PAFZZ	64548	2712522-1	RETAINER, PACKING	1
24	PAFZZ	96906	MS29513-212	PACKIKG, PREFORMED	1
25	PAFZZ	64548	2712521-1	SHAFT, SHOULDERED	1
26	PAFZZ	64548	2712517-1	CAM, CONTROL	1
27	PAFZZ	88044	AN960-816	WASHER, FLAT	1
28	PAFZZ	96906	MS29513-252	PACKING, PREFORMED	1
29	PAFZZ	64548	4051-2-5	PISTON, VALVE	1
30	PAFZA	64548	4631062-250	STRIP, CAP	1
31	PAFZZ	64548	2731616-1	SEAL	1
32	PAFZZ	64548	4051-11-1	CAP	1
33	PAFZZ	64548	5105-18	PUSH ON NUT	1
34	PAFZZ	64548	4051-9	SHAFT, PISTON	1
35	PAFZZ	64548	2661177	SPRING	1
36	PAFZZ	64548	4051-11-2	SPRING	1
37	PAFZZ	96906	MS29561-118	PACKING, PREFORMED	1
38	PAFZZ	96906	MS29513-263	PACHING, PREFORMED	1
39	PAFZZ	64548	4051-1	BODY, VALVE	1
40	PAFZZ	96906	MS29513-111	PACKING, PREFORMED	1
41	PAFZZ	64548	4051-5	SOCKET, VALVE	1
42	PAFZZ	96906	MS29512-10	PACKING, PREFORMED	2
43	PAFZZ	88044	AN814-10D	PLUG, MACHINE THREAD	1

END OF FIGURE

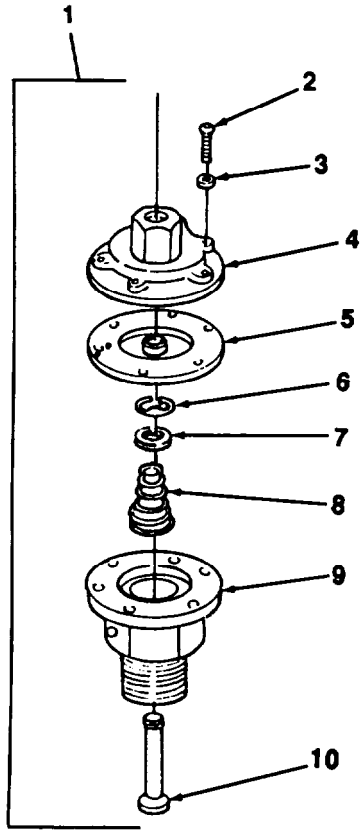


Figure 50. Pilot Valve.

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP: 7203 VALVES, FITTINGS, LINES	
				FIG. 50 PILOT VALVE	
1	PAFFH	64548	2681193	VALVE,CROSS.....	1
2	PAFZZ	03038	LP5C3-6-8	.SCREW,SELF-LOCKING.....	6
3	PAFZZ	80205	NAS620C6	.WASHER,FLAT.....	6
4	PAFZZ	64548	2681197	.COVER,ACCESS.....	1
5	PAFZZ	64548	2633219	.DIAPHRAGM,VALVE,SPE.....	1
6	PAFZZ	96906	MS16633-4018	.RING,RETAINING.....	1
7	PAFZZ	88044	AN960C1CL	.WASHER,FLAT.....	1
8	PAFZZ	64548	2681196	.SPRING,HELICAL,COMP.....	1
9	PAFZZ	64548	2681194	.FLANGE,PIPE.....	1
10	PAFZZ	64548	2813374-101	.DISK,VALVE.....	1

END OF FIGURE

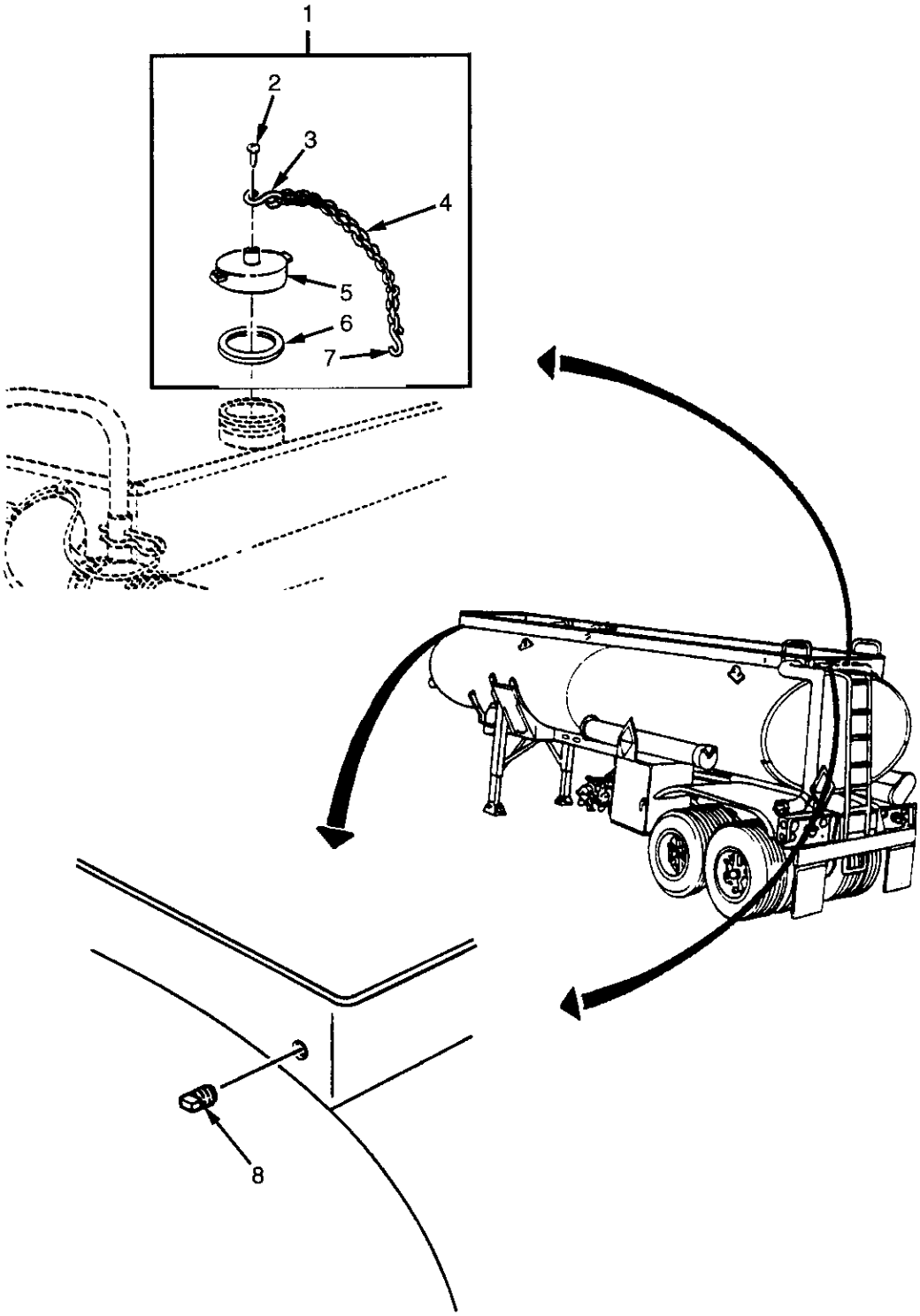


Figure 51. Vent Caps and Drain Plugs

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP: 7203 VALVES, FITTINGS, LINES	
					FIG. 51 VENT CAPS AND DRAIN PLUGS	
* 1	PAOOO	2910010354171	19207	11621224	CAP.....	2
* 2	PAOZZ	5305009845674	96906	MS35206-294	.SCREW,MACHINE.....	2
* 3	PAOZZ	4030009548801	96906	MS87006-43	.HOOK,CHAIN,S.....	2
* 4	MOOZZ	4010009580633	81348	RR-C-271 TY2 CL7 -16	.CHAIN,WELDLESS MAKE FROM CHAIN WELDLESS RR-C-271 TY2 CL7 16 IN. LG.	1
* 5	XAOZZ		19207	11621224-1	.CAP.....	2
* 6	PAOZZ	5330010658849	19207	11621224-2	.GASKET.....	2
* 7	PAOZZ	4030009487315	96906	MS87006-33	.HOOK,CHAIN,S.....	2
* 8	PAOZZ	4730008470036	29930	444631	PLUG,PIPE.....	3
					END OF FIGURE	

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP: 95 GENERAL USE STANDARDIZED PARTS	
					GROUP: 9501 HARDWARE SUPPLIES AND BULK MATERIEL, COMMON	
					FIG. BULK	
* 1	PAOZZ	4010005852108	16003	C43974	CHAIN,WELDLESS	V
* 2	PAOZZ		81349	MILW83420TYPE1-A 1/8DIA7X19	ROPE,WIRE	V
* 3	PAOZZ	4010010054775	81349	M83420/3-001	ROPE,WIRE 1/16 DIA.....	V
* 4	PAOZZ	9540006126376	98897	LS3967	STRUCTURAL SECTION, 12FT. LENGTHS..	V
* 5	PAOZZ	4710012909305	7R766	STBW	TUBE ASSEMBLY,METAL.....	V
* 6	PAOZZ		40846	8588	TUBE,METALLIC.....	V
* 7	PAOZZ	4720012909215	74841	STK40109	TUBING,NONMETALLIC.....	V
* 8	PAOZZ	4720012909216	74841	STK40090	TUBING,NONMETALLIC.....	V
* 9	PAOZZ	4720012909217	74841	TKG5304-1	TUBING,NONMETALLIC 1IN. ID. X 1/8IN. WALL X 12FT. LG.....	V
* 10	PAOZZ	6145011699652	78174	C14EBR	WIRE,ELECTRICAL	V
* 11	PAOZZ	6145012895491	81349	M22759/12-12-1	WIRE,ELECTRICAL	V
* 12	PAOZZ	6145012896197	81349	M22759/14-14-8	WIRE,ELECTRICAL	V
* 13	PAOZZ	6145012912286	81349	M22759/14-14-1	WIRE,ELECTRICAL	V
* 14	PAOZZ	6145012895492	81349	M22759/14-14-5	WIRE,ELECTRICAL	V
* 15	PAOZZ	6145012896198	81349	M22759/14-14-2	WIRE,ELECTRICAL	V
* 16	PAOZZ	6145012902734	81349	M22759/14-14-4	WIRE,ELECTRICAL	V
* 17	PAOZZ	6145012302517	81343	TYPE GPT 14 AWGBLUE	WIRE,ELECTRICAL	V
* 18	PAOZZ	6145008455959	77060	954U	WIRE,ELECTRICAL 12 GA. BLUE.....	V
* 19	PAOZZ	6145011655633	79550	570D-3	WIRE,ELECTRICAL 12 GA. BLUE.....	V
* 20	PAOZZ	6145003102593	64488	81147S	WIRE,ELECTRICAL 14 GA. GRAY.....	V
					END OF FIGURE	

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-00-003-4094	46	16	5310-00-080-6004	30	8
5310-00-003-4094	48	6	5310-00-080-6004	48	13
5310-00-004-5033	30	2	5310-00-081-4219	24	6
5310-00-004-5033	32	3	5310-00-087-4652	12	3
4730-00-011-2578	42	19			
5310-00-014-5850	40	3	5975-00-133-8696	14	13
5310-00-014-5850	43	1	5999-00-134-5844	31	5
6240-00-019-0877	5	7	5940-00-143-4780	6	1
4730-00-041-2651	45	4	5940-00-143-4794	6	2
5310-00-045-3296	43	25	5940-00-143-4794	7	12
5310-00-045-4007	49	9	5320-00-151-5523	9	14
4730-00-050-4203	12	6	5975-00-152-1075	1	2
4730-00-050-4203	12	8	5330-00-165-1963	46	9
4820-00-054-0658	43	10	5310-00-167-0721	49	14
5310-00-061-4650	1	5	5310-00-167-0812	50	7
5310-00-061-4650	9	1	5310-00-167-0823	49	27
5310-00-061-4650	18	4	5940-00-168-3382	7	10
5310-00-061-4650	25	6	4010-00-171-4236	21	8
5310-00-061-4650	26	5	4010-00-171-4236	44	5
5310-00-061-4650	27	8	5325-00-171-9890	4	17
5310-00-061-4650	30	19	5325-00-171-9890	4	28
5310-00-061-4650	32	9	5325-00-171-9890	4	32
5305-00-068-0500	2	4	4730-00-172-0010	12	15
5305-00-068-0500	41A	7	5330-00-172-1919	13	24
5305-00-068-0509	18	9	4730-00-188-3514	13	14
5305-00-068-0509	27	5	4730-00-188-3514	15	10
5305-00-068-0511	15	4	4730-00-188-3514	16	6
5305-00-068-0511	21	14	4730-00-193-2709	41A	17
5305-00-068-0511	27	11	4730-00-193-2709	41A	46
4730-00-069-1187	13	19	4730-00-196-0936	42	18
4730-00-069-1187	18	11	4730-00-196-0936	43	9
4730-00-069-1187	43	22	4730-00-196-1504	16	3
5305-00-071-2069	23	1	4730-00-196-1504	16	10
5305-00-071-2069	30	10	4730-00-196-1973	41A	25
5305-00-071-2070	47	1	4730-00-196-1974	41A	20
5305-00-071-2233	41A	32	4730-00-196-1975	41A	27
5305-00-071-2237	18	14	4730-00-196-1979	41A	31
5305-00-071-2509	30	15	4730-00-204-1993	42	14
5305-00-071-2509	41A	13	9905-00-205-2795	35	3
5310-00-080-6004	12	4	5305-00-225-3843	1	7
5310-00-080-6004	21	3	5305-00-225-3843	9	13
5310-00-080-6004	21	12	5305-00-225-3843	32	7
5310-00-080-6004	21	22	5306-00-225-8499	49	10
5310-00-080-6004	23	6	5306-00-226-4824	2	2
5310-00-080-6004	24	8	5306-00-226-4825	12	18
5310-00-080-6004	24	17	5305-00-226-4831	49	16
5310-00-080-6004	29	3	4730-00-230-1996	42	15

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5305-00-240-0194	43	2	5330-00-565-4293	49	5
5310-00-241-6664	21	17	5935-00-572-9180	5	7
5310-00-241-6664	22	2	5310-00-582-5965	41A	8
5310-00-241-6664	24	2	5310-00-584-5005	2	8
5310-00-241-6664	48	3	5310-00-584-5005	23	12
5310-00-241-6728	25	18	5320-00-584-9078	49	2
5310-00-246-7422	24	3	4010-00-585-2108	BULK	1
5330-00-248-3839	49	40	4010-00-585-2108	41A	11
5330-00-250-0226	49	24	4820-00-595-5104	49	1
2540-00-262-8318	28	2	4820-00-595-5113	49	29
5330-00-263-8032	49	42	5310-00-596-8173	49	33
5310-00-264-1337	2	12	9540-00-612-6376	BULK	4
5305-00-269-3211	21	4	5310-00-615-1556	36A	2
5305-00-269-3211	21	25	3040-00-631-4155	13	2
5310-00-269-4040	17	4	4730-00-640-6156	48	21
5310-00-269-4040	25	1			
4730-00-277-6324	49	11	5330-00-678-9047	5	6
4730-00-277-7331	42	13	2530-00-706-6614	11	3
4730-00-278-4822	15	11	4820-00-720-4488	41A	19
5365-00-278-8803	49	43	5365-00-725-0969	50	6
4730-00-289-0155	13	9	5305-00-725-2317	23	7
4730-00-289-0155	14	15	5305-00-725-2317	30	11
4730-00-289-0155	18	1	5305-00-725-2317	48	17
6145-00-310-2593	BULK	20	5305-00-726-2551	22	4
6220-00-337-6471	5	3	5305-00-726-2551	24	4
5940-00-399-6676	8	16	5305-00-726-2551	48	1
5310-00-404-1402	26	4	5305-00-726-2567	25	14
5310-00-407-9566	47	10	5305-00-727-2283	21	18
5310-00-409-3355	2	9	5305-00-727-2283	24	11
5330-00-432-4218	4	1	4820-00-728-7467	18	8
5330-00-432-4219	4	30	5310-00-732-0558	30	3
5310-00-436-4203	15	5	5310-00-732-0558	31	2
5320-00-454-5156	35	1	5310-00-732-0558	48	18
5330-00-464-7329	4	7	6220-00-752-6018	5	5
4730-00-469-7797	13	13	5310-00-761-3706	33	8
4730-00-469-7797	15	9	5310-00-761-6882	36A	4
6220-00-500-0437	5	4	4730-00-765-9103	13	16
4730-00-511-1677	13	8	5310-00-768-0318	21	2
5330-00-527-8116	49	28	5310-00-768-0318	23	3
5330-00-531-2924	49	38	5310-00-768-0318	30	6
3110-00-541-9166	19	10	5310-00-768-0318	47	3
4730-00-542-5796	4	5	5310-00-773-7624	50	3
2530-00-545-5406	13	4	5365-00-803-7301	12	11
5360-00-548-6741	49	36	4730-00-808-6814	4	3
4820-00-549-4746	50	1	5310-00-809-5998	23	2
4820-00-552-7809	49	40	5310-00-809-5998	30	5
5905-00-553-8197	2	10	5310-00-809-5998	46	15

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-00-809-5998	47	2	6220-00-897-5860	4	29
5310-00-809-5998	48	5	6220-00-897-5862	4	10
5310-00-809-8540	25	17	5330-00-899-4509	46	13
5330-00-811-1105	42	22	5330-00-899-4509	48	22
5310-00-814-0673	12	12	5925-00-900-1904	2	7
5365-00-818-8087	12	19	5310-00-905-0762	41A	14
5310-00-823-8803	24	15	6220-00-905-8497	4	18
5310-00-823-8803	48	2	6220-00-905-8498	3	8
5310-00-823-8804	41A	12	4730-00-908-3194	42	5
6685-00-827-7495	41A	33	6240-00-914-5572	3	4
5310-00-829-9981	49	18	6240-00-914-5572	4	6
5310-00-832-9719	19	15	6240-00-914-5572	4	13
5935-00-833-8561	8	14	4730-00-919-1803	43	23
5970-00-833-8562	8	15	5310-00-922-1794	5	2
5310-00-833-8567	5	8	5310-00-922-1794	27	10
5310-00-834-8732	44	3	5310-00-922-1794	30	7
4730-00-840-0796	46	12	5310-00-922-1794	31	3
6220-00-844-6471	4	8	5310-00-922-1794	34	2
6145-00-845-5959	BULK	18	5310-00-926-1835	36A	1
5330-00-846-0501	49	37			
5935-00-846-3883	2	5	2540-00-930-5303	31	1
5935-00-846-3884	2	3	6240-00-931-6683	4	23
5305-00-846-5703	24	21	6240-00-931-6683	4	37
5305-00-846-5703	48	20	5310-00-934-9739	2	11
4730-00-847-0036	16	1	5310-00-934-9758	43	24
4730-00-847-0036	16	8	5310-00-935-9021	15	6
4730-00-847-0036	51	8	5310-00-935-9021	21	11
5935-00-856-3513	2	1	5310-00-935-9021	21	23
5940-00-858-3621	6	9	5310-00-935-9021	23	5
5940-00-858-3621	7	11	5310-00-935-9021	24	18
5940-00-858-3621	8	1	5310-00-935-9021	27	9
5360-00-862-2860	30	17	5310-00-935-9021	29	4
4930-00-878-1308	50	5	5310-00-935-9021	30	9
5310-00-880-7744	24	7	5310-00-935-9021	32	4
5310-00-880-7744	28	1	5310-00-935-9021	34	3
5310-00-880-7744	45	16	5310-00-935-9021	45	2
5310-00-880-7744	47	11	5310-00-935-9021	48	14
5305-00-889-2997	2	13	5310-00-938-5543	19	17
4730-00-891-0798	13	1	4030-00-948-7315	51	7
5320-00-891-9081	37	1	5310-00-951-7209	17	3
5320-00-891-9081	38	2	5310-00-951-7209	21	16
5310-00-894-2353	1	6	5310-00-951-7209	22	3
6220-00-897-5856	3	1	4030-00-954-8801	51	3
5330-00-897-5857	4	22	4010-00-958-0633	51	4
5330-00-897-5857	4	38	5340-00-976-9355	31	5
5330-00-897-5859	3	3	5310-00-982-6580	18	3
5330-00-897-5859	4	12	5310-00-982-6580	27	7

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5310-00-982-6580	30	18	4730-01-115-7362	14	9
5310-00-982-6580	32	8	5325-01-116-4683	4	25
5305-00-984-5674	51	2	5325-01-116-4683	4	34
5305-00-984-5674	51	6	5940-01-117-3419	9	8
5320-00-987-2984	40	2	5999-01-117-7996	4	21
5310-00-998-8178	46	17	5999-01-117-7996	4	36
5310-00-998-8178	48	7	5360-01-118-2274	49	17
9905-00-999-7369	27	2	3040-01-118-4154	49	34
9905-00-999-7370	27	4	3040-01-118-5519	49	20
4010-01-005-4775	BULK	3	3040-01-118-5954	49	7
3110-01-006-9504	19	8	5360-01-119-1338	49	35
5330-01-011-2204	12	22	5330-01-119-1339	49	31
5310-01-022-5552	26	2	5330-01-119-1372	49	23
5330-01-024-2311	33	9	5340-01-119-1830	49	8
2910-01-035-4171	51	1	5310-01-119-3088	49	6
4730-01-038-2350	41A	4	4820-01-119-4886	49	3
4730-01-038-2350	41A	45	4730-01-119-6895	14	6
2610-01-045-3688	20	1	5340-01-119-7121	49	32
2590-01-054-0253	45	11	4820-01-119-9189	49	30
2530-01-061-1351	7	15	4730-01-120-8048	49	12
5310-01-061-8727	33	4	5320-01-123-5674	3	19
4730-01-062-2570	42	2	5325-01-127-1390	3	7
5306-01-075-8519	28	4	5325-01-127-1390	4	16
5360-01-077-9428	33	15	4730-01-134-0856	14	17
5330-01-077-9759	12	20	4730-01-134-1278	13	18
5330-01-081-5070	48	15	3040-01-157-3343	49	25
5330-01-082-3189	3	11	5305-01-157-7390	50	2
5325-01-086-4841	8	6	3040-01-158-9242	49	26
5325-01-086-4841	13	22	5360-01-160-0505	50	8
5325-01-086-4841	45	5	5340-01-162-0430	41A	10
4730-01-090-3237	42	7	2530-01-163-7340	16	2
4730-01-091-2809	43	11	2530-01-163-7340	16	9
4730-01-091-8032	14	1	5305-01-164-1601	49	4
4730-01-091-8032	43	8	6145-01-165-5633	BULK	19
4730-01-095-2034	43	14	6145-01-169-9652	BULK	10
2530-01-095-3561	17	1	5340-01-170-3165	50	4
4730-01-095-5833	13	12	5315-01-171-0750	21	9
4730-01-095-7717	13	3	5315-01-171-0750	34	5
4730-01-095-7717	15	2	4820-01-173-8502	50	10
4730-01-096-3169	14	10	3040-01-180-3166	49	21
4730-01-096-3204	13	23	5999-01-180-3411	3	5
4730-01-096-9127	43	17	5999-01-180-3411	4	14
4730-01-096-9128	14	16	5315-01-186-0829	49	19
4730-01-096-9128	18	5	5930-01-187-8026	7	16
4730-01-096-9128	42	11	5925-01-190-4632	2	6
5340-01-100-2536	41A	52	4810-01-190-5606	49	39
4730-01-115-6643	43	13	4730-01-191-6528	50	9

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
9905-01-195-0663	35	2	5330-01-289-4925	4	19
5365-01-197-9549	12	16	5310-01-289-5011	23	9
4730-01-198-5438	19	2	6145-01-289-5491	BULK	11
5310-01-198-7838	9	2	6145-01-289-5492	BULK	14
5310-01-198-7838	23	11			
2530-01-198-7860	24	14	5975-01-289-5976	16	13
5315-01-198-7883	19	4	5975-01-289-5976	44	4
5340-01-198-7885	19	7	6145-01-289-6197	BULK	12
5365-01-198-7892	24	12	6145-01-289-6198	BULK	15
5310-01-198-9325	25	9	5360-01-289-6220	11	10
9905-01-198-9327	36	2	5310-01-289-7782	45	15
5310-01-199-1769	19	5	5340-01-289-7791	33	5
5360-01-199-1776	11	11	5340-01-289-7792	46	3
4820-01-210-1251	18	15	5306-01-289-7824	23	4
5305-01-210-4595	29	2	5306-01-289-7825	16	12
5305-01-210-4595	31	4	5306-01-289-7826	47	8
5305-01-210-4595	45	1	5306-01-289-7831	5	1
2530-01-228-0246	11	7	5330-01-289-7840	19	18
			5330-01-289-7843	12	14
3120-01-229-1130	25	8	5330-01-289-7845	19	3
6145-01-230-2517	BULK	17	5365-01-289-7896	19	21
5340-01-243-2769	46	1	5306-01-289-9133	25	10
2990-01-243-6393	33	10	5305-01-289-9143	45	17
5330-01-246-1043	33	6	5306-01-289-9144	21	21
4730-01-256-3734	48	9	5340-01-289-9157	46	14
4730-01-268-7410	27	6	5307-01-289-9168	34	1
6220-01-285-6072	4	20	5305-01-289-9212	12	5
6220-01-285-6073	4	2	5325-01-289-9265	6	11
4730-01-285-6074	27	1	5325-01-289-9265	7	7
2530-01-285-6076	12	7	5325-01-289-9265	8	7
2530-01-285-6077	19	12	5325-01-289-9265	13	5
5680-01-285-6078	33	1	5325-01-289-9265	14	4
2530-01-285-6079	15	7	4730-01-289-9533	47	6
2530-01-285-6080	15	3	4730-01-289-9534	47	7
6220-01-285-6081	4	31	4730-01-289-9537	3	9
6220-01-285-6082	3	2	4730-01-289-9545	42	9
6220-01-285-6084	4	11	4730-01-289-9555	47	5
4710-01-285-6085	32	5	4730-01-289-9559	42	10
4710-01-285-6086	30	13	4730-01-289-9566	48	23
2530-01-285-6089	11	1	7690-01-290-0170	38	4
2640-01-286-1712	19	22	7690-01-290-0171	38	5
5306-01-286-5426	33	14	7690-01-290-0172	39	1
4820-01-287-0736	48	10	7690-01-290-0173	41	1
2530-01-287-3978	13	17	7690-01-290-0174	41	2
5305-01-288-8320	3	12	7690-01-290-0175	36	1
5305-01-288-8320	4	9	2530-01-290-1329	13	15
2530-01-289-1013	16	7	2530-01-290-1329	16	4

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
2530-01-290-1329	16	11	2530-01-290-5074	10	1
2530-01-290-1475	12	23	6220-01-290-5151	4	20
2530-01-290-1476	17	2	6220-01-290-5152	4	26
5306-01-290-2209	33	2	6220-01-290-5152	4	33
5310-01-290-2218	33	3	2530-01-290-5683	26	7
5315-01-290-2276	11	6	2510-01-290-5695	21	15
5365-01-290-2286	26	3	2540-01-290-5696	46	5
4720-01-290-2513	15	8	2530-01-290-5715	19	20
2590-01-290-2533	24	19	7690-01-290-6382	38	3
2590-01-290-2534	24	10	5365-01-290-8307	49	13
2510-01-290-2545	24	5	5340-01-290-8322	25	4
2510-01-290-2571	22	1	5340-01-290-8666	11	9
5306-01-290-2684	24	9	5340-01-290-8669	9	16
5306-01-290-2685	26	1	5340-01-290-8670	14	3
5306-01-290-2693	30	1	5340-01-290-8670	43	20
5306-01-290-2693	32	2	5340-01-290-8671	30	4
5306-01-290-2694	46	11	5340-01-290-8672	32	1
5306-01-290-2694	48	12	5340-01-290-8673	19	19
5306-01-290-2695	25	5	5330-01-290-8877	49	22
5340-01-290-2720	18	12	4710-01-290-9139	47	9
5340-01-290-2721	48	4	4730-01-290-9198	48	16
5340-01-290-2726	30	16	4720-01-290-9208	15	13
6145-01-290-2734	BULK	16	4720-01-290-9215	BULK	7
5340-01-290-2748	15	12	4720-01-290-9216	BULK	8
5340-01-290-2749	25	13	4720-01-290-9217	BULK	9
5340-01-290-2751	27	3	4710-01-290-9305	BULK	5
5340-01-290-2752	21	24	5340-01-290-9661	21	10
5340-01-290-2753	28	3	4720-01-290-9709	46	2
6150-01-290-2873	7	14	2530-01-290-9728	19	11
4820-01-290-3414	47	12	5340-01-291-0261	32	6
4820-01-290-3662	44	2	5365-01-291-0730	25	15
4820-01-290-3666	42	8	4820-01-291-0991	16	5
5306-01-290-3755	25	11	4820-01-291-0991	16	14
5340-01-290-3812	18	16	2990-01-291-1277	33	7
4730-01-290-3846	45	10	6145-01-291-2286	BULK	13
5340-01-290-3867	11	8	5340-01-291-2319	6	19
5340-01-290-3883	12	17	5340-01-291-2319	7	8
2530-01-290-3920	12	23	5340-01-291-4556	12	13
5306-01-290-4864	25	12	2540-01-291-4558	30	12
5305-01-290-4867	19	14	4710-01-291-4596	48	8
5340-01-290-4889	24	16	3040-01-291-4627	26	6
5340-01-290-4890	24	1	2590-01-291-4632	24	13
4820-01-290-4917	48	19	5340-01-291-5190	21	5
4720-01-290-4933	46	10	5340-01-291-5199	6	20
4720-01-290-4942	46	4	5340-01-291-5199	8	5
2510-01-290-5020	29	1	5340-01-291-5199	9	17
3040-01-290-5025	47	4	5340-01-291-5199	13	10

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STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5340-01-291-5199	18	10	5340-01-298-8285	21	1
5340-01-291-5199	43	18	5340-01-298-8286	21	1
5340-01-291-5199	45	7	2510-01-300-0244	33	11
5340-01-291-5200	14	14	5940-01-304-6301	6	18
5340-01-291-5200	43	4	5940-01-304-6301	7	13
4820-01-291-5261	45	3	5310-01-306-3480	21	20
5310-01-291-8881	19	6	5310-01-308-5778	46	6
5310-01-291-8883	19	13	5330-01-308-5870	48	11
3120-01-291-8901	12	1	5310-01-308-5959	46	7
5340-01-291-9213	13	7	5307-01-308-5984	46	8
5340-01-291-9213	43	16	2530-01-309-0983	12	9
5307-01-292-1483	19	16	6220-01-315-1458	3	2
2510-01-292-3689	25	3	4730-01-316-8836	42	20
5307-01-292-3715	44	1	5975-01-317-2425	3	13
5310-01-292-5351	12	10	4820-01-317-8235	43	3
5310-01-292-5352	25	7	5340-01-317-9614	9	7
9905-01-292-8867	37	2	5330-01-318-1911	3	17
9905-01-292-8868	37	4	5330-01-318-1912	9	6
9905-01-292-8869	40	1	5340-01-318-2042	3	20
9905-01-292-8870	38	7	5325-01-318-2076	43	7
9905-01-292-8871	38	6	5325-01-318-2077	43	21
9905-01-292-8872	40	8	4330-01-318-2805	42	21
9905-01-292-8873	40	7	4730-01-318-9772	42	23
9905-01-292-8875	40	4	4730-01-319-3381	3	15
7690-01-293-7623	39	2	5306-01-320-1049	23	10
3120-01-293-9562	12	21	5340-01-320-3920	3	18
2530-01-294-7170	23	8	6685-01-320-4820	43	5
2530-01-294-7171	25	16	5340-01-320-7096	9	15
2530-01-296-3028	11	2	5995-01-321-5779	9	4
4730-01-297-0171	1	4	5930-01-321-7107	42	4
4730-01-297-0171	3	14	5975-01-322-6364	9	5
4730-01-297-0172	1	3	5340-01-330-5495	24	20
4730-01-297-0172	3	16	2530-01-333-4715	19	1
4730-01-297-0172	9	9	9905-01-342-9148	40	5
7690-01-297-7967	37	3	9905-01-345-3539	40	6
9905-01-298-8206	38	1	9905-01-379-5693	36A	3

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
74841	A-CC5226-1	2530-01-290-9728	19	11
14109	A-CC7538-900	2530-01-333-4715	19	1
14109	A-CD2285-1	5365-01-197-9549	12	16
74841	A-CD2813-1	5310-01-291-8883	19	13
14109	A-CD7180-1	5340-01-198-7885	19	7
74841	A-CE5245-1		19	9
74841	A-CE5939-6	2530-01-163-7340	16	2
		2530-01-163-7340	16	9
74841	A-CE6220-1	2530-01-285-6077	19	12
74841	A-CE6277-3	2530-01-290-5074	10	1
74841	A-CE6477-1	5340-01-290-2748	15	12
14109	A-CE8510-1	5310-01-199-1769	19	5
74841	A-CE8760-5	2530-01-290-5715	19	20
74841	A-CE8766-7	5365-01-289-7896	19	21
74841	A-CE8769-2	2640-01-286-1712	19	22
74841	A-CE9120-1	5340-01-290-8673	19	19
14109	A-CE9911-1	5360-01-199-1776	11	11
74841	A-CE9950-1	5307-01-292-1483	19	16
74841	A-CF-4854-1	2530-01-285-6089	11	1
74841	A-CF1328-1	5340-01-290-3867	11	8
74841	A-CF2662-EM4	2530-01-290-1476	17	2
74841	A-CF3079-1	5360-01-289-6220	11	10
74841	A-CF3378-1	5315-01-290-2276	11	6
74841	A-CF3379-1		11	5
74841	A-CF4021-1	5340-01-291-4556	12	13
74841	A-CF4022-1	5340-01-290-3883	12	17
74841	A-CF4205-1	2530-01-285-6076	12	7
74841	A-CF4858-1	2530-01-296-3028	11	2
74841	A-XA0068-1	3120-01-291-8901	12	1
74841	A-XA0408-1	5310-01-291-8881	19	6
14109	A-XA0409-1	5315-01-198-7883	19	4
74841	A-XA0412-1	5330-01-289-7843	12	14
74841	A-XA0413-1	3120-01-293-9562	12	21
74841	A-XA0420-1	2530-01-290-1475	12	23
74841	A-XA0420-2	2530-01-290-3920	12	23
74841	A-XA0432-1	5310-01-292-5351	12	10
74841	A-XA0484-1	5330-01-289-7845	19	3
74841	A-XA0495-1	2530-01-294-7171	25	16
14109	A-XA1005-1	4730-01-198-5438	19	2
07707	AD610ABS	5320-00-454-5156	35	1
06721	AE-86313	2530-01-290-1329	13	15
		2530-01-290-1329	16	4
		2530-01-290-1329	16	11
88044	AN814-10D	5365-00-278-8803	49	43
88044	AN960-816	5310-00-167-0823	49	27
88044	AN960C10L	5310-00-167-0812	50	7
18887	AVR-093H		41A	35
14109	AXA0414-1	5330-01-011-2204	12	22
14109	AXA0415-1	5330-01-077-9759	12	20
12623	B-1GF4-1/4IN	4820-01-210-1251	18	15
13226	B-50500012	6220-00-905-8498	3	8
13226	B-60600011	6220-00-905-8497	4	18
03743	BL50	5975-00-152-1075	1	2

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
80204	B1821BH025C100N	5305-00-225-3843	1	7
		5305-00-225-3843	9	13
		5305-00-225-3843	32	7
80204	B1821BH025C125N	5305-00-068-0509	27	5
80204	B1821BH025C150N	5305-00-071-2509	30	15
		5305-00-071-2509	41A	13
80204	B1821BH031C063N	5306-00-226-4824	2	2
80204	B1821BH031C075N	5306-00-226-4825	12	18
80204	B1821BH031C150N	5305-00-226-4831	49	16
80204	B1821BH038C125N	5305-00-068-0511	15	4
		5305-00-068-0511	21	14
		5305-00-068-0511	27	11
80204	B1821BH038C150N	5305-00-725-2317	23	7
		5305-00-725-2317	30	11
		5305-00-725-2317	48	17
80204	B1821BH038C300N	5305-00-846-5703	24	21
		5305-00-846-5703	48	20
80204	B1821BH050C150N	5305-00-071-2069	23	1
		5305-00-071-2069	30	10
80204	B1821BH050C175N	5305-00-071-2070	47	1
80204	B1821BH063F150N	5305-00-727-2283	21	18
		5305-00-727-2283	24	11
80204	B1821BH063F200N	5305-00-726-2551	22	4
		5305-00-726-2551	24	4
		5305-00-726-2551	48	1
83298	B20500-11	5310-00-045-3296	43	25
98410	B231	5940-00-168-3382	7	10
14726	B4044BN	5940-01-117-3419	9	8
14726	B4052B	5940-01-304-6301	6	18
		5940-01-304-6301	7	13
14726	B4071B		6	10
12662	B475A	9905-01-195-0663	35	2
79154	C-044-75-P-T0	4730-01-256-3734	48	9
15434	C0505027400	4730-00-808-6814	4	3
78174	C14EBR	6145-01-169-9652	BULK	10
16003	C43974	4010-00-585-2108	BULK	1
16003	C43974-30.0		41A	11
12145	C43974 X 30IN	4820-00-054-0658	43	10
4J564	DT-308		1	1
91340	D12420-6	5310-00-823-8803	24	15
		5310-00-823-8803	48	2
91816	D559B-2M-1		41A	39
91816	D559B-2M-6		41A	38
98441	EM-12		41A	36
98441	EM-25		41A	29
01276	FL5507GHG0320	4720-01-290-9208	15	13
01276	FL5507GHG0540	4720-01-290-2513	15	8
74841	FSP11-1-14	5325-01-318-2076	43	7
74841	FSP11-1-18	5325-01-318-2077	43	21
23705	FSP11-1-3	5325-01-086-4841	8	6
		5325-01-086-4841	13	22
		5325-01-086-4841	45	5
14109	FSP11-1-4	5325-01-289-9265	6	11
		5325-01-289-9265	7	7
		5325-01-289-9265	8	7

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
		5325-01-289-9265	13	5
		5325-01-289-9265	14	4
14109	FSP12-17-1	4730-00-765-9103	13	16
14109	FSP12-2-4		12	2
14109	FSP5-5-11	5305-01-290-4867	19	14
14109	FSP5-5-20	5305-01-289-9212	12	5
14109	FSP7-2-1	5310-01-198-7838	9	2
		5310-01-198-7838	23	11
13226	FVA9763BXB	5680-01-285-6078	33	1
79318	F445	4730-01-290-9198	48	16
79318	F635AD	4820-01-287-0736	48	10
81348	GP3STYLXTYRACLR/ T/11.00R22.50/G/	2610-01-045-3688	20	1
97783	GR011RED	9905-00-205-2795	35	3
60038	HM518445	3110-01-006-9504	19	8
60038	HM518445HM518410	3110-00-541-9166	19	10
46717	LA-361-9	6240-00-019-0877	5	7
74841	LKA3332-1		3	10
74841	LKA3332-2		8	4
74841	LKA3332-3		9	10
74841	LKA3332-4		3	10
74841	LKA3334-1		6	13
74841	LKA3334-2		7	21
74841	LKA3334-3		8	11
74841	LKA3334-4		7	4
74841	LKA3334-5		6	4
74841	LKA3342-1		45	18
74841	LKA3342-2		45	23
74841	LKA3342-3		45	6
74841	LKA3342-4		45	12
74841	LKA3342-5		45	21
74841	LKA3342-6		45	9
74841	LKA3342-7		45	20
74841	LKA3342-8		45	13
74841	LKA9655-1		6	15
74841	LKA9655-2		7	20
74841	LKA9655-3		8	10
03038	LP503-6-8	5305-01-157-7390	50	2
98897	LS3967	9540-00-612-6376	BULK	4
79154	M-2	5330-01-308-5870	48	11
81349	MILW83420TYPE1-A 1/8DIA7X19	4010-01-218-4109	BULK	2
96906	MS15001-1	4730-00-050-4203	12	6
		4730-00-050-4203	12	8
96906	MS15002-1	4730-00-172-0010	12	15
96906	MS16213-61	5310-00-894-2353	1	6
96906	MS16213-63	5310-00-922-1794	5	2
		5310-00-922-1794	27	10
		5310-00-922-1794	30	7
		5310-00-922-1794	31	3
		5310-00-922-1794	34	2
96906	MS16624-1050	5365-00-803-7301	12	11
96906	MS16624-1162	5365-00-818-8087	12	19
96906	MS16633-4018	5365-00-725-0969	50	6

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS171656	5315-01-186-0829	49	19
96906	MS20470A4-4	5320-00-584-9078	49	2
96906	MS20600B4W7	5320-00-151-5523	9	14
96906	MS20600B8W6	5320-01-123-5674	3	19
96906	MS20913-3	4730-00-188-3514	13	14
		4730-00-188-3514	15	10
		4730-00-188-3514	16	6
96906	MS21083C3	5310-00-926-1835	36A	1
96906	MS25036-108	5940-00-143-4780	6	1
96906	MS25036-112	5940-00-143-4794	6	2
		5940-00-143-4794	7	12
96906	MS27020-17	4730-00-840-0796	46	12
96906	MS27028-17	4730-00-640-6156	48	21
96906	MS27030-9	5330-00-899-4509	46	13
		5330-00-899-4509	48	22
96906	MS27183-1	5310-00-982-6580	18	3
		5310-00-982-6580	27	7
		5310-00-982-6580	30	18
		5310-00-982-6580	32	8
96906	MS27183-12	5310-00-081-4219	24	6
96906	MS27183-14	5310-00-080-6004	12	4
		5310-00-080-6004	21	3
		5310-00-080-6004	21	12
		5310-00-080-6004	21	22
		5310-00-080-6004	23	6
		5310-00-080-6004	24	8
		5310-00-080-6004	24	17
		5310-00-080-6004	29	3
		5310-00-080-6004	30	8
		5310-00-080-6004	48	13
96906	MS27183-18	5310-00-809-5998	23	2
		5310-00-809-5998	30	5
		5310-00-809-5998	46	15
		5310-00-809-5998	47	2
		5310-00-809-5998	48	5
96906	MS27183-22	5310-00-951-7209	17	3
		5310-00-951-7209	21	16
		5310-00-951-7209	22	3
96906	MS27183-25	5310-00-809-8540	25	17
96906	MS27183-9	5310-00-823-8804	41A	12
96906	MS27769-4	4730-00-277-6324	49	11
96906	MS29512-10	5330-00-263-8032	49	42
96906	MS29513-111	5330-00-248-3839	49	40
96906	MS29513-212	5330-00-250-0226	49	24
96906	MS29513-252	5330-00-527-8116	49	28
96906	MS29513-263	5330-00-531-2924	49	38
96906	MS29561-118	5330-00-846-0501	49	37
96906	MS3367-6-9	5975-00-133-8696	14	13
96906	MS35206-215	5305-00-889-2997	2	13
96906	MS35206-294	5305-00-984-5674	51	2
96906	MS35333-41	5310-00-167-0721	49	14
96906	MS35338-41	5310-00-045-4007	49	9
96906	MS35338-44	5310-00-582-5965	41A	8
96906	MS35338-45	5310-00-407-9566	47	10

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
96906	MS35489-97	5325-00-171-9890	4	17
		5325-00-171-9890	4	28
		5325-00-171-9890	4	32
96906	MS35649-202	5310-00-934-9758	43	24
96906	MS35649-2312	5310-00-829-9981	49	18
96906	MS35649-242	5310-00-934-9739	2	11
96906	MS35690-1424	5310-00-241-6728	25	18
96906	MS35691-33	5310-00-834-8732	44	3
30327	MS35782-2	4820-00-720-4488	41A	19
96906	MS35842-11	4730-00-908-3194	42	5
96906	MS51330-1	6220-00-337-6471	5	3
96906	MS51468-05	5310-01-289-5011	23	9
96906	MS51846-1	4730-00-230-1996	42	15
96906	MS51846-24	4730-00-193-2709	41A	17
		4730-00-193-2709	41A	46
96906	MS51846-28	4730-00-196-1973	41A	24
96906	MS51846-30	4730-00-196-1974	41A	20
96906	MS51846-31	4730-00-196-1975	41A	26
96906	MS51846-35	4730-00-196-1979	41A	30
96906	MS51849-76	5305-00-240-0194	43	2
96906	MS51922-17	5310-00-087-4652	12	3
96906	MS51922-49	5310-00-269-4040	17	4
		5310-00-269-4040	25	1
96906	MS51922-61	5310-00-832-9719	19	15
96906	MS51943-31	5310-00-061-4650	1	5
		5310-00-061-4650	9	1
		5310-00-061-4650	18	4
		5310-00-061-4650	27	8
		5310-00-061-4650	30	19
		5310-00-061-4650	32	9
96906	MS51943-33	5310-00-814-0673	12	12
96906	MS51943-35	5310-00-935-9021	15	6
		5310-00-935-9021	21	11
		5310-00-935-9021	21	23
		5310-00-935-9021	23	5
		5310-00-935-9021	24	18
		5310-00-935-9021	27	9
		5310-00-935-9021	29	4
		5310-00-935-9021	30	9
		5310-00-935-9021	32	4
		5310-00-935-9021	34	3
		5310-00-935-9021	45	2
		5310-00-935-9021	48	14
96906	MS51943-44	5310-00-241-6664	21	17
		5310-00-241-6664	22	2
		5310-00-241-6664	24	2
		5310-00-241-6664	48	3
96906	MS51943-50	5310-00-061-4650	25	6
		5310-00-061-4650	26	5
96906	MS51967-15	5310-00-761-3706	33	8
96906	MS51967-2	5310-00-761-6882	36A	4
96906	MS51967-3	5310-00-905-0762	41A	14
96906	MS51967-5	5310-00-880-7744	24	7
		5310-00-880-7744	28	1
		5310-00-880-7744	45	16

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
		5310-00-880-7744	47	11
96906	MS51967-8	5310-00-732-0558	30	3
		5310-00-732-0558	31	2
		5310-00-732-0558	48	18
96906	MS53007-1	9905-00-999-7370	27	4
96906	MS53007-2	9905-00-999-7369	27	2
96906	MS53047-1	6220-00-500-0437	5	4
96906	MS75021-1	5935-00-846-3883	2	5
96906	MS75021-2	5935-00-846-3884	2	3
96906	MS87006-33	4030-00-948-7315	51	7
96906	MS87006-43	4030-00-954-8801	51	3
96906	MS90725-14	5305-00-071-2237	18	14
96906	MS90725-18	5305-00-071-2233	41A	31
96906	MS90725-3	5305-00-068-0500	2	4
		5305-00-068-0500	41A	7
96906	MS90725-34	5306-00-225-8499	49	10
96906	MS90725-36	5306-01-075-8519	28	4
96906	MS90727-176	5305-00-726-2567	25	14
13226	M210-01-0365		4	4
81349	M22759/12-12-1	6145-01-289-5491	BULK	11
81349	M22759/14-14-1	6145-01-291-2286	BULK	13
81349	M22759/14-14-2	6145-01-289-6198	BULK	15
81349	M22759/14-14-4	6145-01-290-2734	BULK	16
81349	M22759/14-14-5	6145-01-289-5492	BULK	14
81349	M22759/14-14-8	6145-01-289-6197	BULK	12
81343	M4109-01-08-00B		41A	15
			41A	40
81349	M4109-09-08-00B	4730-01-038-2350	41A	4
		4730-01-038-2350	41A	45
81349	M83248/1-245	5330-00-165-1963	46	9
81349	M83413/7-1	5999-00-134-5844	31	5
81349	M83420/3-001	4010-01-005-4775	BULK	3
06721	N-3613-AD	4820-01-291-0991	16	5
		4820-01-291-0991	16	14
80205	NAS620C6	5310-00-773-7624	50	3
61424	N10MC8	4730-01-297-0171	1	4
		4730-01-297-0171	3	14
06721	N4305A	2530-01-289-1013	16	7
61424	N6MC8	4730-01-297-0172	1	3
		4730-01-297-0172	3	16
		4730-01-297-0172	9	9
93061	N6ME4	4730-01-289-9537	3	9
81349	RER75F1502R	5905-00-553-8197	2	10
81348	RR-C-271 TY2 CL7 -16	4010-00-958-0633	51	4
74841	S-CE3719-2	2590-01-291-4632	24	13
14109	S-CF0486-1	5365-01-198-7892	24	12
14109	S-CF0487-1	2530-01-198-7860	24	14
74841	S-CF4399-54	2590-01-290-2534	24	10
74841	S-XA0244	5306-01-290-2684	24	9
81343	SAEJ560	5935-00-856-3513	2	1
74841	SCF004399641	2590-01-290-2533	24	19
81349	SG2ID1HPWPONCG	6685-01-320-4820	43	5
7R766	STBW	4710-01-290-9305	BULK	5
74841	STK14372-1		6	17

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
74841	STK14372-2		7	22
74841	STK14372-4		4	15
74841	STK14372-5		4	27
74841	STK14372-7		8	3
74841	STK14372-8		8	9
74841	STK14373-1		3	6
74841	STK14373-2		4	35
74841	STK14373-3		8	13
74841	STK14373-4		7	2
74841	STK14373-5		6	5
74841	STK14373-6		3	6
74841	STK14373-7		9	11
74841	STK14374-2		7	3
74841	STK14374-3		6	6
74841	STK14375-1		4	39
74841	STK14375-2		8	12
74841	STK14375-3		7	6
74841	STK14375-4		6	8
74841	STK14376-1		9	12
74841	STK14377-1		6	14
74841	STK14377-2		7	19
74841	STK14377-3		4	24
74841	STK40090	4720-01-290-9216	BULK	8
74841	STK40090-1		13	20
74841	STK40090-10		14	12
74841	STK40090-11		42	16
74841	STK40090-12		42	17
74841	STK40090-13		42	12
74841	STK40090-14		43	19
74841	STK40090-15		42	1
74841	STK40090-16		42	3
74841	STK40090-17		14	8
74841	STK40090-2		18	6
74841	STK40090-3		18	13
74841	STK40090-4		18	7
74841	STK40090-5		18	2
74841	STK40090-6		18	17
74841	STK40090-7		14	11
74841	STK40090-8		13	21
74841	STK40090-9		13	11
74841	STK40109	4720-01-290-9215	BULK	7
74841	STK40109-1		14	2
74841	STK40109-2		13	6
74841	STK40109-3		14	7
74841	STK40109-4		14	5
74841	STK40109-5		15	1
74841	STK40109-7		43	12
74841	STK40109-8		43	6
74841	STK40109-9		43	15
74841	SWA6215	5340-01-330-5495	24	20
14544	S1594	5305-00-269-3211	21	4
		5305-00-269-3211	21	25
74841	T-KA8662	7690-01-290-0174	41	2
74841	TKA 8650	7690-01-293-7623	39	2
74841	TKA 9848	7690-01-290-6382	38	3

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
74841	TKA1003	4820-01-290-3662	44	2
74841	TKA6640	5320-00-891-9081	37	1
		5320-00-891-9081	38	2
74841	TKA6754		32	10
7V618	TKA7199	5306-01-290-2694	46	11
		5306-01-290-2694	48	12
74841	TKA7579	5307-01-289-9168	34	1
74841	TKA8654	7690-01-290-0172	39	1
74841	TKA8657	7690-01-290-0173	41	1
74841	TKA9276	2510-01-290-5020	29	1
74841	TKA9551	7690-01-290-0170	38	4
74841	TKA9552	7690-01-290-0171	38	5
74841	TKG0084-4	5340-01-318-2042	3	20
74841	TKG0149-1	5340-01-290-8670	14	3
		5340-01-290-8670	43	20
74841	TKG0149-2	5340-01-291-5200	14	14
		5340-01-291-5200	43	4
74841	TKG0149-3	5340-01-291-9213	13	7
		5340-01-291-9213	43	16
74841	TKG0149-4	5340-01-291-5199	6	20
		5340-01-291-5199	8	5
		5340-01-291-5199	9	17
		5340-01-291-5199	13	10
		5340-01-291-5199	18	10
		5340-01-291-5199	43	18
		5340-01-291-5199	45	7
74841	TKG0149-5	5340-01-290-8669	9	16
74841	TKG0149-6	5340-01-291-2319	6	19
		5340-01-291-2319	7	8
75364	TKG0510-13	4730-01-289-9545	42	9
74841	TKG0571-1	4730-01-319-3381	3	15
74841	TKG0572-1	5340-01-320-3920	3	18
74841	TKG0573-1	5330-01-318-1911	3	17
74841	TKG0591-7-3		42	3
74841	TKG0896-1	7690-01-290-0175	36	1
74841	TKG1336-6-1		6	16
74841	TKG1336-6-2		7	23
74841	TKG5016-1	2510-01-290-5695	21	15
74841	TKG5043-1		21	19
74841	TKG5045-1	4820-01-290-3414	47	12
79318	TKG5046-1	5930-01-321-7107	42	4
74841	TKG5067-1	4730-01-289-9566	48	23
74841	TKG5070-1		30	14
74841	TKG5084-1	2510-01-290-2571	22	1
74841	TKG5092-1	2530-01-285-6079	15	7
74841	TKG5092-2	2530-01-285-6080	15	3
74841	TKG5108-1		21	6
74841	TKG5108-2		34	4
74841	TKG5153-1	5307-01-292-3715	44	1
74841	TKG5154-1	5340-01-290-9661	21	10
74841	TKG5161-1	2540-01-291-4558	30	12
74841	TKG5169-1	4710-01-291-4596	48	8
74841	TKG5173-1	5340-01-291-5190	21	5
74841	TKG5188-1	5340-01-290-2721	48	4
74841	TKG5193-1	4710-01-290-9139	47	9

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
74841	TKG5198-1	4710-01-285-6086	30	13
74841	TKG5204-1	5340-01-290-2726	30	16
74841	TKG5209-1	5340-01-290-4889	24	16
74841	TKG5209-2	5340-01-290-4890	24	1
74841	TKG5215-1	5340-01-290-2753	28	3
74841	TKG5219-1	4730-01-285-6074	27	1
74841	TKG5228-1	4710-01-285-6085	32	5
74841	TKG5230-1	5340-01-290-8671	30	4
74841	TKG5230-2	5340-01-290-8672	32	1
74841	TKG5265-1	5340-01-298-8285	21	1
74841	TKG5265-2	5340-01-298-8286	21	1
74841	TKG5273-1	2530-01-294-7170	23	8
74841	TKG5274-1	3040-01-290-5025	47	4
74841	TKG5276-1	4820-01-291-5261	45	3
74841	TKG5277-1	4730-01-289-9555	47	5
74841	TKG5290-1	5340-01-290-2751	27	3
74841	TKG5299-1	4720-01-290-4933	46	10
74841	TKG5300-1	4720-01-290-9709	46	2
74841	TKG5301-1	4720-01-290-4942	46	4
74841	TKG5302-1	5340-01-290-3812	18	16
74841	TKG5303-1	5340-01-290-2720	18	12
74841	TKG5304-1	4720-01-290-9217	BULK	9
74841	TKG5304-1-1		42	6
74841	TKG5309-1		6	3
74841	TKG5309-2		6	12
74841	TKG5309-3		7	1
74841	TKG5309-4		7	17
74841	TKG5310-1	6220-01-285-6082	3	2
74841	TKG5310-2	6220-01-315-1458	3	2
74841	TKG5311-2	6220-01-285-6084	4	11
74841	TKG5312-1	6220-01-285-6081	4	31
74841	TKG5312-2	6220-01-290-5151	4	20
74841	TKG5312-3	6220-01-285-6072	4	20
74841	TKG5313-1	6220-01-285-6073	4	2
74841	TKG5314-1		8	2
74841	TKG5315-1		8	8
74841	TKG5317-2	6150-01-290-2873	7	14
74841	TKG5320-1-3		7	5
74841	TKG5320-1-4		6	7
74841	TKG5320-1-5		7	18
74841	TKG5322-1	2510-01-290-2545	24	5
74841	TKG5326-1	9905-01-292-8867	37	2
74841	TKG5327-1	9905-01-292-8868	37	4
74841	TKG5328-1	9905-01-292-8869	40	1
74841	TKG5329-1	9905-01-292-8872	40	8
74841	TKG5330-1	9905-01-292-8873	40	7
74841	TKG5332-1	5320-00-987-2984	40	2
74841	TKG5333-1	9905-01-292-8870	38	7
74841	TKG5334-1	9905-01-292-8871	38	6
74841	TKG5335-1	9905-01-292-8875	40	4
74841	TKG5341-1	5340-01-290-2752	21	24
74841	TKG5372	6220-01-290-5152	4	26
		6220-01-290-5152	4	33
74841	TKG5459-1	4820-01-290-3666	42	8
74841	TKG5469-1	9905-01-298-8206	38	1

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
74841	TKG5470-1	7690-01-297-7967	37	3
74841	TKG5471-2	9905-01-342-9148	40	5
74841	TKG5498-1	5975-01-322-6364	9	5
74841	TKG5499-1	5330-01-318-1912	9	6
74841	TKG5501-1	5340-01-317-9614	9	7
74841	TKG5517-1	2530-01-309-0983	12	9
74841	TKG5526-1	5975-01-317-2425	3	13
74841	TKG5529-1		9	3
74841	TKG5548-1	4820-01-317-8235	43	3
74841	TKG5560-1	9905-01-345-3539	40	6
81343	TYPE GPT 14 AWGB LUE	6145-01-230-2517	BULK	17
75160	T23837	4730-00-278-4822	15	11
74841	U-CD0511-1	2510-01-292-3689	25	3
74841	U-CD4502-1	5365-01-291-0730	25	15
74841	U-CE8801-1	5340-01-290-8322	25	4
74841	U-CF1459-1	5340-01-290-2749	25	13
74841	U-CF2640-1	2530-01-290-5683	26	7
74841	U-XA0003-1	5310-01-292-5352	25	7
14109	U-XA0004	3120-01-229-1130	25	8
74841	U-XA0011	5365-01-290-2286	26	3
74841	U-XA0015	5306-01-289-9133	25	10
74841	U-XA0016-X	5306-01-290-2685	26	1
74841	U-XA0026	3040-01-291-4627	26	6
74841	U-XA0046-16	5306-01-290-3755	25	11
74841	U-XA0046-17	5306-01-290-2695	25	5
14109	U-XA0356-2	5310-01-198-9325	25	9
74841	VKA0351	5306-01-289-7825	16	12
74841	VKA0583-1		45	22
74841	VKA0583-2		45	8
74841	VKA0583-3		45	19
74841	VKA0583-4		45	14
74841	VKA0619	5340-01-289-9157	46	14
74841	VKA0909	5306-01-320-1049	23	10
74841	VKA1043	4730-01-289-9533	47	6
74841	VKA1081	4730-01-289-9534	47	7
74841	VKA3849	4730-01-290-3846	45	10
75364	VKA7792	4730-01-289-9559	42	10
74841	VKA7882	5306-01-289-7826	47	8
04898	VKA8994	5975-01-289-5976	16	13
		5975-01-289-5976	44	4
74841	VKA8995-3		34	7
04898	VKD5061-00		21	7
			34	6
74841	VWA8862	2530-01-287-3978	13	17
93061	V406P-4		41A	28
13226	WD401-AL-V	4820-01-290-4917	48	19
79470	W05465	4730-00-919-1803	43	23
14109	X-CE7964-1	9905-01-198-9327	36	2
74841	ZKA 9865	5306-01-289-9144	21	21
74841	ZKA7799	5306-01-289-7831	5	1
74841	ZKA8295	5306-01-290-4864	25	12
74841	ZKA8903	5306-01-289-7824	23	4
7V618	ZKA9836	5306-01-290-2693	30	1
		5306-01-290-2693	32	2

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
74841	ZKA9866	5310-01-306-3480	21	20
21439	01857-007	5310-00-768-0318	21	2
		5310-00-768-0318	23	3
		5310-00-768-0318	30	6
		5310-00-768-0318	47	3
78680	100059	2540-00-262-8318	28	2
75535	1023056	5340-01-162-0430	41A	10
05443	10268-A	5310-01-289-7782	45	15
34895	1041571-5	5310-00-264-1337	2	12
98343	10451E	4730-01-096-3204	13	23
98343	10452S	4730-00-891-0798	13	1
06721	10453110	4730-01-268-7410	27	6
56161	10503176	4730-00-204-1993	42	14
30327	109B1-4	4730-00-011-2578	42	19
19207	10959979	2540-00-930-5303	31	1
50153	11M011	2530-01-095-3561	17	1
72914	11246	3040-00-631-4155	13	2
21450	115224	4730-00-196-0936	42	18
		4730-00-196-0936	43	9
08108	1157A	6240-00-931-6683	4	23
		6240-00-931-6683	4	37
19207	11621224	2910-01-035-4171	51	1
19207	11621224-1		51	5
19207	11621224-2	5305-00-984-5674	51	6
19207	11668899	5340-01-100-2536	41A	52
19207	11670914	5330-01-081-5070	48	15
24617	120375	5310-00-584-5005	23	12
24617	120376	5310-00-409-3355	2	9
29930	120378	5310-00-998-8178	46	17
		5310-00-998-8178	48	7
19207	12380149	9905-01-379-5693	36A	3
19207	12461893		41A	51
19207	12461902		41A	2
19207	12461903		41A	9
19207	12461904		41A	37
19207	12461906		41A	22
19207	12461908		41A	50
19207	12468902		41A	44
97403	13222E0109	5305-01-210-4595	29	2
		5305-01-210-4595	31	4
		5305-01-210-4595	45	1
45152	1379HX1	5310-00-014-5850	40	3
		5310-00-014-5850	43	1
03670	14089		21	13
79470	1469X6	4730-00-069-1187	13	19
79470	1472X8X8X4	4730-01-134-0856	14	17
98343	1509	5330-00-172-1919	13	24
07282	16222		41A	6
24617	163137	5305-01-288-8320	3	12
		5305-01-288-8320	4	9
13226	18626-FL	5307-01-308-5984	46	8
19207	192075	4730-00-196-1504	16	3
		4730-00-196-1504	16	10
81343	2-2-130138		41A	34
05443	20032-A	2590-01-054-0253	45	11

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
05443	20040-A	5305-01-289-9143	45	17
13226	201R	6220-00-844-6471	4	8
85274	2020	6685-00-827-7495	41A	32
32869	20245	5330-00-811-1105	42	22
93061	207ACBH-6	4730-00-511-1677	13	8
13226	209	5330-00-432-4218	4	1
96652	21-09	5315-01-171-0750	21	9
		5315-01-171-0750	34	5
76545	21C100AMP	5340-00-976-9355	31	5
01276	210104-8S	5310-00-003-4094	46	16
		5310-00-003-4094	48	6
06853	212227	2530-00-545-5406	13	4
85274	2205		41A	23
93061	2225P-6	4730-00-469-7797	13	13
		4730-00-469-7797	15	9
93061	2225P-8	4730-01-095-2034	43	14
32869	24388ACAP3-4IN	4330-01-318-2805	42	21
32869	24388ASCRN3-4IN	4730-01-318-9772	42	23
32869	24388A3-4IN	4730-01-316-8836	42	20
91816	259B-2PP.5		41A	49
28527	2616950G001	5310-00-615-1556	36A	2
80064	2624732	5310-00-436-4203	15	5
79318	2633219	4930-00-878-1308	50	5
79318	2661177	5360-01-119-1338	49	35
79318	2681193	4820-00-549-4746	50	1
79318	2681194	4730-01-191-6528	50	9
79318	2681196	5360-01-160-0505	50	8
79318	2681197	5340-01-170-3165	50	4
93061	269NTA-6-4	4730-00-069-1187	18	11
		4730-00-069-1187	43	22
93061	269NTA-6-6	4730-00-289-0155	13	9
		4730-00-289-0155	14	15
		4730-00-289-0155	18	1
93061	269NTA-8-4	4730-01-115-7362	14	9
93061	269NTA-8-6	4730-01-095-7717	13	3
		4730-01-095-7717	15	2
93061	269NTA-8-8	4730-01-115-6643	43	13
79318	2712515	4730-01-120-8048	49	12
45681	2712517-1	3040-01-158-9242	49	26
79318	2712518	3040-01-118-5519	49	20
79318	2712519	5310-01-119-3088	49	6
16069	2712520	3040-01-118-5954	49	7
79318	2712521-1	3040-01-157-3343	49	25
79318	2712522-1	5330-01-119-1372	49	23
79318	2712524-1	3040-01-180-3166	49	21
93061	272NTA-6-6	4730-01-095-5833	13	12
93061	272NTA-8-6	4730-01-119-6895	14	6
79318	2721205-1	5365-01-290-8307	49	13
79318	2731616-1	5330-01-119-1339	49	31
06853	278614	4820-00-728-7467	18	8
93061	279NTA-8-6	4730-01-091-2809	43	11
79318	2813374-101	4820-01-173-8502	50	10
94231	3-07620-311	5310-00-004-5033	30	2
		5310-00-004-5033	32	3
13445	30056-10	5925-00-900-1904	2	7

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
49632	3029CP	5306-01-290-2209	33	2
13226	3030-BR	5310-01-061-8727	33	4
49632	3031CP	5310-01-290-2218	33	3
49632	3036CP	5340-01-289-7791	33	5
13226	3119BN	5330-01-024-2311	33	9
49632	3129JCP	5360-01-077-9428	33	15
13226	3139SL	5306-01-286-5426	33	14
76301	32-21088-5	5310-00-246-7422	24	3
00779	327638	5940-00-858-3621	6	9
		5940-00-858-3621	7	11
		5940-00-858-3621	8	1
23705	330733	2530-01-228-0246	11	7
49632	3560-BN		33	13
79318	3706000-518-12	5305-01-164-1601	49	4
13226	3716 VT	5330-01-246-1043	33	6
81343	4-2-130139BA		41A	33
81343	4-2-130239BA		41A	21
81343	4-4-130137BA		41A	5
81343	4-4-130238BA		41A	16
81343	4-4-140131		41A	27
81343	4-4-140137BA		41A	42
81343	4-4-140238BA		41A	48
81343	4-4-4-130438BA		41A	25
81343	4-4-4-140338BA		41A	41
81343	4-4-4-4-130538BA		41A	18
81343	4-4-4-4-140538BA		41A	47
79318	4021S2M3	5330-00-565-4293	49	5
79318	4051-1	4810-01-190-5606	49	39
79318	4051-11-1	5340-01-119-7121	49	32
79318	4051-11-2	5360-00-548-6741	49	36
79318	4051-13	4820-01-119-4886	49	3
79318	4051-17	4820-00-595-5104	49	1
79318	4051-2-5	4820-00-595-5113	49	29
79318	4051-5	4820-00-552-7809	49	40
79318	4051-7-5	5360-01-118-2274	49	17
79318	4051-8	5340-01-119-1830	49	8
79318	4051-9	3040-01-118-4154	49	34
79409	40701	5995-01-321-5779	9	4
24617	427587	5305-00-068-0509	18	9
29930	444631	4730-00-847-0036	16	1
		4730-00-847-0036	16	8
		4730-00-847-0036	51	8
24617	455394		25	2
13226	46269AL	2540-01-290-5696	46	5
79318	4631062-250	4820-01-119-9189	49	30
13226	51A	6220-00-897-5856	3	1
79318	5105-18	5310-00-596-8173	49	33
13226	52	5330-00-897-5859	3	3
		5330-00-897-5859	4	12
21439	52C3861-3	4730-00-041-2651	45	4
80201	533886	5330-01-289-7840	19	18
23705	535885	5310-00-938-5543	19	17
81646	5456	5340-01-289-7792	46	3
13445	5558	5930-01-187-8026	7	16
19207	5598-2M-6		41A	39

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
73685	5697-C	5340-01-291-0261	32	6
19207	57K3087		41A	1
79550	570D-3	6145-01-165-5633	BULK	19
74841	583015	5340-01-290-8666	11	9
13226	59	5330-01-082-3189	3	11
81343	6-2 100202BA	4730-01-134-1278	13	18
81343	6-6-6 130438B	4730-00-277-7331	42	13
81343	6-8 100302BA	4730-01-096-3169	14	10
49632	6234AL	2990-01-291-1277	33	7
13226	6238AL	2990-01-243-6393	33	10
79409	65-0085	5340-01-320-7096	9	15
30003	67A314C117-1	5310-01-022-5552	26	2
93061	68C-6-2	4730-00-542-5796	4	5
93061	68NTA-6-4	4730-01-062-2570	42	2
93061	68NTA-6-6	4730-01-096-9128	14	16
		4730-01-096-9128	18	5
		4730-01-096-9128	42	11
93061	68NTA-6-8	4730-01-096-9127	43	17
93061	68NTA-8-4	4730-01-090-3237	42	7
93061	68NTA-8-6	4730-01-091-8032	14	1
		4730-01-091-8032	43	8
81646	6880	5340-01-243-2769	46	1
13226	69	5330-01-289-4925	4	19
19207	7068272	4010-00-171-4236	21	8
		4010-00-171-4236	44	5
13226	71R	6220-00-897-5860	4	29
89346	714250C1	5925-01-190-4632	2	6
13226	72	5330-00-897-5857	4	22
		5330-00-897-5857	4	38
19207	7526018	6220-00-752-6018	5	5
13226	76	5325-01-116-4683	4	25
		5325-01-116-4683	4	34
13226	79	5330-00-432-4219	4	30
68505	8X163	5310-00-584-5005	2	8
13226	8046AL167	2510-01-300-0244	33	11
64488	81147S	6145-00-310-2593	BULK	20
13445	81264	2530-01-061-1351	7	15
19207	8338561	5935-00-833-8561	8	14
19207	8338562	5970-00-833-8562	8	15
19207	8338564	5940-00-399-6676	8	16
19207	8338566	5935-00-572-9180	5	7
19207	8338567	5310-00-833-8567	5	8
19204	8437243-2	5360-00-862-2860	30	17
40846	8588		BULK	6
79318	86-0062-N517-8	5330-01-290-8877	49	22
19207	8694464	5330-00-678-9047	5	6
13226	9Q5805	5310-01-308-5778	46	6
13226	9Q5847	5310-01-308-5959	46	7
13226	920051	5330-00-464-7329	4	7
13226	920102	6220-00-897-5862	4	10
13226	920120	5999-01-180-3411	3	5
		5999-01-180-3411	4	14
13226	920123	5325-01-127-1390	3	7
		5325-01-127-1390	4	16
13226	920148	5999-01-117-7996	4	21

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CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
		5999-01-117-7996	4	36
97907	9235215	5310-00-404-1402	26	4
89346	93931R96	2530-00-706-6614	11	3
77060	954U	6145-00-845-5959	BULK	18
91816	9559B-2PP		41A	3
			41A	43
08108	97	6240-00-914-5572	3	4
		6240-00-914-5572	4	6
		6240-00-914-5572	4	13

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
BULK	1	4010-00-585-2108	16003	C43974
BULK	2		81349	MILW83420TYPE1-A
BULK	2			1/8DIA7X19
BULK	3	4010-01-005-4775	81349	M83420/3-001
BULK	4	9540-00-612-6376	98897	LS3967
BULK	5	4710-01-290-9305	7R766	STBW
BULK	6		40846	8588
BULK	7	4720-01-290-9215	74841	STK40109
BULK	8	4720-01-290-9216	74841	STK40090
BULK	9	4720-01-290-9217	74841	TKG5304-1
BULK	10	6145-01-169-9652	78174	C14EBR
BULK	11	6145-01-289-5491	81349	M22759/12-12-1
BULK	12	6145-01-289-6197	81349	M22759/14-14-8
BULK	13	6145-01-291-2286	81349	M22759/14-14-1
BULK	14	6145-01-289-5492	81349	M22759/14-14-5
BULK	15	6145-01-289-6198	81349	M22759/14-14-2
BULK	16	6145-01-290-2734	81349	M22759/14-14-4
BULK	17	6145-01-230-2517	81343	TYPE GPT 14 AWGB
BULK	17			LUE
BULK	18	6145-00-845-5959	77060	954U
BULK	19	6145-01-165-5633	79550	570D-3
BULK	20	6145-00-310-2593	64488	81147S
1	1		4J564	DT-308
1	2	5975-00-152-1075	03743	BL50
1	3	4730-01-297-0172	61424	N6MC8
1	4	4730-01-297-0171	61424	N10MC8
1	5	5310-00-061-4650	96906	MS51943-31
1	6	5310-00-894-2353	96906	MS16213-61
1	7	5305-00-225-3843	80204	B1821BH025C100N
2	1	5935-00-856-3513	81343	SAEJ560
2	2	5306-00-226-4824	80204	B1821BH031C063N
2	3	5935-00-846-3884	96906	MS75021-2
2	4	5305-00-068-0500	96906	MS90725-3
2	5	5935-00-846-3883	96906	MS75021-1
2	6	5925-01-190-4632	89346	714250C1
2	7	5925-00-900-1904	13445	30056-10
2	8	5310-00-584-5005	68505	8X163
2	9	5310-00-409-3355	24617	120376
2	10	5905-00-553-8197	81349	RER75F1502R
2	11	5310-00-934-9739	96906	MS35649-242
2	12	5310-00-264-1337	34895	1041571-5
2	13	5305-00-889-2997	96906	MS35206-215
3	1	6220-00-897-5856	13226	51A
3	2	6220-01-285-6082	74841	TKG5310-1
3	2	6220-01-315-1458	74841	TKG5310-2
3	3	5330-00-897-5859	13226	52
3	4	6240-00-914-5572	08108	97
3	5	5999-01-180-3411	13226	920120
3	6		74841	STK14373-1
3	6		74841	STK14373-6
3	7	5325-01-127-1390	13226	920123
3	8	6220-00-905-8498	13226	B-50500012
3	9	4730-01-289-9537	93061	N6ME4
3	10		74841	LKA3332-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
3	10		74841	LKA3332-4
3	11	5330-01-082-3189	13226	59
3	12	5305-01-288-8320	24617	163137
3	13	5975-01-317-2425	74841	TKG5526-1
3	14	4730-01-297-0171	61424	N10MC8
3	15	4730-01-319-3381	74841	TKG0571-1
3	16	4730-01-297-0172	61424	N6MC8
3	17	5330-01-318-1911	74841	TKG0573-1
3	18	5340-01-320-3920	74841	TKG0572-1
3	19	5320-01-123-5674	96906	MS20600B8W6
3	20	5340-01-318-2042	74841	TKG0084-4
4	1	5330-00-432-4218	13226	209
4	2	6220-01-285-6073	74841	TKG5313-1
4	3	4730-00-808-6814	15434	C0505027400
4	4		13226	M210-01-0365
4	5	4730-00-542-5796	93061	68C-6-2
4	6	6240-00-914-5572	08108	97
4	7	5330-00-464-7329	13226	920051
4	8	6220-00-844-6471	13226	201R
4	9	5305-01-288-8320	24617	163137
4	10	6220-00-897-5862	13226	920102
4	11	6220-01-285-6084	74841	TKG5311-2
4	12	5330-00-897-5859	13226	52
4	13	6240-00-914-5572	08108	97
4	14	5999-01-180-3411	13226	920120
4	15		74841	STK14372-4
4	16	5325-01-127-1390	13226	920123
4	17	5325-00-171-9890	96906	MS35489-97
4	18	6220-00-905-8497	13226	B-60600011
4	19	5330-01-289-4925	13226	69
4	20	6220-01-290-5151	74841	TKG5312-2
4	20	6220-01-285-6072	74841	TKG5312-3
4	21	5999-01-117-7996	13226	920148
4	22	5330-00-897-5857	13226	72
4	23	6240-00-931-6683	08108	1157A
4	24		74841	STK14377-3
4	25	5325-01-116-4683	13226	76
4	26	6220-01-290-5152	74841	TKG5372
4	27		74841	STK14372-5
4	28	5325-00-171-9890	96906	MS35489-97
4	29	6220-00-897-5860	13226	71R
4	30	5330-00-432-4219	13226	79
4	31	6220-01-285-6081	74841	TKG5312-1
4	32	5325-00-171-9890	96906	MS35489-97
4	33	6220-01-290-5152	74841	TKG5372
4	34	5325-01-116-4683	13226	76
4	35		74841	STK14373-2
4	36	5999-01-117-7996	13226	920148
4	37	6240-00-931-6683	08108	1157A
4	38	5330-00-897-5857	13226	72
4	39		74841	STK14375-1
5	1	5306-01-289-7831	74841	ZKA7799
5	2	5310-00-922-1794	96906	MS16213-63
5	3	6220-00-337-6471	96906	MS51330-1
5	4	6220-00-500-0437	96906	MS53047-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
5	5	6220-00-752-6018	19207	7526018
5	6	5330-00-678-9047	19207	8694464
5	7	6240-00-019-0877	46717	LA-361-9
5	7	5935-00-572-9180	19207	8338566
5	8	5310-00-833-8567	19207	8338567
6	1	5940-00-143-4780	96906	MS25036-108
6	2	5940-00-143-4794	96906	MS25036-112
6	3		74841	TKG5309-1
6	4		74841	LKA3334-5
6	5		74841	STK14373-5
6	6		74841	STK14374-3
6	7		74841	TKG5320-1-4
6	8		74841	STK14375-4
6	9	5940-00-858-3621	00779	327638
6	10		14726	B4071B
6	11	5325-01-289-9265	14109	FSP11-1-4
6	12		74841	TKG5309-2
6	13		74841	LKA3334-1
6	14		74841	STK14377-1
6	15		74841	LKA9655-1
6	16		74841	TKG1336-6-1
6	17		74841	STK14372-1
6	18	5940-01-304-6301	14726	B4052B
6	19	5340-01-291-2319	74841	TKG0149-6
6	20	5340-01-291-5199	74841	TKG0149-4
7	1		74841	TKG5309-3
7	2		74841	STK14373-4
7	3		74841	STK14374-2
7	4		74841	LKA3334-4
7	5		74841	TKG5320-1-3
7	6		74841	STK14375-3
7	7	5325-01-289-9265	14109	FSP11-1-4
7	8	5340-01-291-2319	74841	TKG0149-6
7	10	5940-00-168-3382	98410	B231
7	11	5940-00-858-3621	00779	327638
7	12	5940-00-143-4794	96906	MS25036-112
7	13	5940-01-304-6301	14726	B4052B
7	14	6150-01-290-2873	74841	TKG5317-2
7	15	2530-01-061-1351	13445	81264
7	16	5930-01-187-8026	13445	5558
7	17		74841	TKG5309-4
7	18		74841	TKG5320-1-5
7	19		74841	STK14377-2
7	20		74841	LKA9655-2
7	21		74841	LKA3334-2
7	22		74841	STK14372-2
7	23		74841	TKG1336-6-2
8	1	5940-00-858-3621	00779	327638
8	2		74841	TKG5314-1
8	3		74841	STK14372-7
8	4		74841	LKA3332-2
8	5	5340-01-291-5199	74841	TKG0149-4
8	6	5325-01-086-4841	23705	FSP11-1-3
8	7	5325-01-289-9265	14109	FSP11-1-4
8	8		74841	TKG5315-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
8	9		74841	STK14372-8
8	10		74841	LKA9655-3
8	11		74841	LKA3334-3
8	12		74841	STK14375-2
8	13		74841	STK14373-3
8	14	5935-00-833-8561	19207	8338561
8	15	5970-00-833-8562	19207	8338562
8	16	5940-00-399-6676	19207	8338564
9	1	5310-00-061-4650	96906	MS51943-31
9	2	5310-01-198-7838	14109	FSP7-2-1
9	3		74841	TKG5529-1
9	4	5995-01-321-5779	79409	40701
9	5	5975-01-322-6364	74841	TKG5498-1
9	6	5330-01-318-1912	74841	TKG5499-1
9	7	5340-01-317-9614	74841	TKG5501-1
9	8	5940-01-117-3419	14726	B4044BN
9	9	4730-01-297-0172	61424	N6MC8
9	10		74841	LKA3332-3
9	11		74841	STK14373-7
9	12		74841	STK14376-1
9	13	5305-00-225-3843	80204	B1821BH025C100N
9	14	5320-00-151-5523	96906	MS20600B4W7
9	15	5340-01-320-7096	79409	65-0085
9	16	5340-01-290-8669	74841	TKG0149-5
9	17	5340-01-291-5199	74841	TKG0149-4
10	1	2530-01-290-5074	74841	A-CE6277-3
11	1	2530-01-285-6089	74841	A-CF-4854-1
11	2	2530-01-296-3028	74841	A-CF4858-1
11	3	2530-00-706-6614	89346	93931R96
11	5		74841	A-CF3379-1
11	6	5315-01-290-2276	74841	A-CF3378-1
11	7	2530-01-228-0246	23705	330733
11	8	5340-01-290-3867	74841	A-CF1328-1
11	9	5340-01-290-8666	74841	583015
11	10	5360-01-289-6220	74841	A-CF3079-1
11	11	5360-01-199-1776	14109	A-CE9911-1
12	1	3120-01-291-8901	74841	A-XA0068-1
12	2		14109	FSP12-2-4
12	3	5310-00-087-4652	96906	MS51922-17
12	4	5310-00-080-6004	96906	MS27183-14
12	5	5305-01-289-9212	14109	FSP5-5-20
12	6	4730-00-050-4203	96906	MS15001-1
12	7	2530-01-285-6076	74841	A-CF4205-1
12	8	4730-00-050-4203	96906	MS15001-1
12	9	2530-01-309-0983	74841	TKG5517-1
12	10	5310-01-292-5351	74841	A-XA0432-1
12	11	5365-00-803-7301	96906	MS16624-1050
12	12	5310-00-814-0673	96906	MS51943-33
12	13	5340-01-291-4556	74841	A-CF4021-1
12	14	5330-01-289-7843	74841	A-XA0412-1
12	15	4730-00-172-0010	96906	MS15002-1
12	16	5365-01-197-9549	14109	A-CD2285-1
12	17	5340-01-290-3883	74841	A-CF4022-1
12	18	5306-00-226-4825	80204	B1821BH031C075N
12	19	5365-00-818-8087	96906	MS16624-1162

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
12	20	5330-01-077-9759	14109	AXA0415-1
12	21	3120-01-293-9562	74841	A-XA0413-1
12	22	5330-01-011-2204	14109	AXA0414-1
12	23	2530-01-290-1475	74841	A-XA0420-1
12	23	2530-01-290-3920	74841	A-XA0420-2
13	1	4730-00-891-0798	98343	10452S
13	2	3040-00-631-4155	72914	11246
13	3	4730-01-095-7717	93061	269NTA-8-6
13	4	2530-00-545-5406	06853	212227
13	5	5325-01-289-9265	14109	FSP11-1-4
13	6		74841	STK40109-2
13	7	5340-01-291-9213	74841	TKG0149-3
13	8	4730-00-511-1677	93061	207ACBH-6
13	9	4730-00-289-0155	93061	269NTA-6-6
13	10	5340-01-291-5199	74841	TKG0149-4
13	11		74841	STK40090-9
13	12	4730-01-095-5833	93061	272NTA-6-6
13	13	4730-00-469-7797	93061	2225P-6
13	14	4730-00-188-3514	96906	MS20913-3
13	15	2530-01-290-1329	06721	AE-86313
13	16	4730-00-765-9103	14109	FSP12-17-1
13	17	2530-01-287-3978	74841	VWA8862
13	18	4730-01-134-1278	81343	6-2 100202BA
13	19	4730-00-069-1187	79470	1469X6
13	20		74841	STK40090-1
13	21		74841	STK40090-8
13	22	5325-01-086-4841	23705	FSP11-1-3
13	23	4730-01-096-3204	98343	10451E
13	24	5330-00-172-1919	98343	1509
14	1	4730-01-091-8032	93061	68NTA-8-6
14	2		74841	STK40109-1
14	3	5340-01-290-8670	74841	TKG0149-1
14	4	5325-01-289-9265	14109	FSP11-1-4
14	5		74841	STK40109-4
14	6	4730-01-119-6895	93061	272NTA-8-6
14	7		74841	STK40109-3
14	8		74841	STK40090-17
14	9	4730-01-115-7362	93061	269NTA-8-4
14	10	4730-01-096-3169	81343	6-8 100302BA
14	11		74841	STK40090-7
14	12		74841	STK40090-10
14	13	5975-00-133-8696	96906	MS3367-6-9
14	14	5340-01-291-5200	74841	TKG0149-2
14	15	4730-00-289-0155	93061	269NTA-6-6
14	16	4730-01-096-9128	93061	68NTA-6-6
14	17	4730-01-134-0856	79470	1472X8X8X4
15	1		74841	STK40109-5
15	2	4730-01-095-7717	93061	269NTA-8-6
15	3	2530-01-285-6080	74841	TKG5092-2
15	4	5305-00-068-0511	80204	B1821BH038C125N
15	5	5310-00-436-4203	80064	2624732
15	6	5310-00-935-9021	96906	MS51943-35
15	7	2530-01-285-6079	74841	TKG5092-1
15	8	4720-01-290-2513	01276	FL5507GHG0540
15	9	4730-00-469-7797	93061	2225P-6

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
15	10	4730-00-188-3514	96906	MS20913-3
15	11	4730-00-278-4822	75160	T23837
15	12	5340-01-290-2748	74841	A-CE6477-1
15	13	4720-01-290-9208	01276	FL5507GHG0320
16	1	4730-00-847-0036	29930	444631
16	2	2530-01-163-7340	74841	A-CE5939-6
16	3	4730-00-196-1504	19207	192075
16	4	2530-01-290-1329	06721	AE-86313
16	5	4820-01-291-0991	06721	N-3613-AD
16	6	4730-00-188-3514	96906	MS20913-3
16	7	2530-01-289-1013	06721	N4305A
16	8	4730-00-847-0036	29930	444631
16	9	2530-01-163-7340	74841	A-CE5939-6
16	10	4730-00-196-1504	19207	192075
16	11	2530-01-290-1329	06721	AE-86313
16	12	5306-01-289-7825	74841	VKA0351
16	13	5975-01-289-5976	04898	VKA8994
16	14	4820-01-291-0991	06721	N-3613-AD
17	1	2530-01-095-3561	50153	11M011
17	2	2530-01-290-1476	74841	A-CF2662-EM4
17	3	5310-00-951-7209	96906	MS27183-22
17	4	5310-00-269-4040	96906	MS51922-49
18	1	4730-00-289-0155	93061	269NTA-6-6
18	2		74841	STK40090-5
18	3	5310-00-982-6580	96906	MS27183-1
18	4	5310-00-061-4650	96906	MS51943-31
18	5	4730-01-096-9128	93061	68NTA-6-6
18	6		74841	STK40090-2
18	7		74841	STK40090-4
18	8	4820-00-728-7467	06853	278614
18	9	5305-00-068-0509	24617	427587
18	10	5340-01-291-5199	74841	TKG0149-4
18	11	4730-00-069-1187	93061	269NTA-6-4
18	12	5340-01-290-2720	74841	TKG5303-1
18	13		74841	STK40090-3
18	14	5305-00-071-2237	96906	MS90725-14
18	15	4820-01-210-1251	12623	B-1GF4-1/4IN
18	16	5340-01-290-3812	74841	TKG5302-1
18	17		74841	STK40090-6
19	1	2530-01-333-4715	14109	A-CC7538-900
19	2	4730-01-198-5438	14109	A-XA1005-1
19	3	5330-01-289-7845	74841	A-XA0484-1
19	4	5315-01-198-7883	14109	A-XA0409-1
19	5	5310-01-199-1769	14109	A-CE8510-1
19	6	5310-01-291-8881	74841	A-XA0408-1
19	7	5340-01-198-7885	14109	A-CD7180-1
19	8	3110-01-006-9504	60038	HM518445
19	9		74841	A-CE5245-1
19	10	3110-00-541-9166	60038	HM518445HM518410
19	11	2530-01-290-9728	74841	A-CC5226-1
19	12	2530-01-285-6077	74841	A-CE6220-1
19	13	5310-01-291-8883	74841	A-CD2813-1
19	14	5305-01-290-4867	14109	FSP5-5-11
19	15	5310-00-832-9719	96906	MS51922-61
19	16	5307-01-292-1483	74841	A-CE9950-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
19	17	5310-00-938-5543	23705	535885
19	18	5330-01-289-7840	80201	533886
19	19	5340-01-290-8673	74841	A-CE9120-1
19	20	2530-01-290-5715	74841	A-CE8760-5
19	21	5365-01-289-7896	74841	A-CE8766-7
19	22	2640-01-286-1712	74841	A-CE8769-2
20	1	2610-01-045-3688	81348	GP3STYLXTYRACLR/
20	1			T/11.00R22.50/G/
21	1	5340-01-298-8285	74841	TKG5265-1
21	1	5340-01-298-8286	74841	TKG5265-2
21	2	5310-00-768-0318	21439	01857-007
21	3	5310-00-080-6004	96906	MS27183-14
21	4	5305-00-269-3211	14544	S1594
21	5	5340-01-291-5190	74841	TKG5173-1
21	6		74841	TKG5108-1
21	7		04898	VKD5061-00
21	8	4010-00-171-4236	19207	7068272
21	9	5315-01-171-0750	96652	21-09
21	10	5340-01-290-9661	74841	TKG5154-1
21	11	5310-00-935-9021	96906	MS51943-35
21	12	5310-00-080-6004	96906	MS27183-14
21	13		03670	14089
21	14	5305-00-068-0511	80204	B1821BH038C125N
21	15	2510-01-290-5695	74841	TKG5016-1
21	16	5310-00-951-7209	96906	MS27183-22
21	17	5310-00-241-6664	96906	MS51943-44
21	18	5305-00-727-2283	80204	B1821BH063F150N
21	19		74841	TKG5043-1
21	20	5310-01-306-3480	74841	ZKA9866
21	21	5306-01-289-9144	74841	ZKA 9865
21	22	5310-00-080-6004	96906	MS27183-14
21	23	5310-00-935-9021	96906	MS51943-35
21	24	5340-01-290-2752	74841	TKG5341-1
21	25	5305-00-269-3211	14544	S1594
22	1	2510-01-290-2571	74841	TKG5084-1
22	2	5310-00-241-6664	96906	MS51943-44
22	3	5310-00-951-7209	96906	MS27183-22
22	4	5305-00-726-2551	80204	B1821BH063F200N
23	1	5305-00-071-2069	80204	B1821BH050C150N
23	2	5310-00-809-5998	96906	MS27183-18
23	3	5310-00-768-0318	21439	01857-007
23	4	5306-01-289-7824	74841	ZKA8903
23	5	5310-00-935-9021	96906	MS51943-35
23	6	5310-00-080-6004	96906	MS27183-14
23	7	5305-00-725-2317	80204	B1821BH038C150N
23	8	2530-01-294-7170	74841	TKG5273-1
23	9	5310-01-289-5011	96906	MS51468-05
23	10	5306-01-320-1049	74841	VKA0909
23	11	5310-01-198-7838	14109	FSP7-2-1
23	12	5310-00-584-5005	24617	120375
24	1	5340-01-290-4890	74841	TKG5209-2
24	2	5310-00-241-6664	96906	MS51943-44
24	3	5310-00-246-7422	76301	32-21088-5
24	4	5305-00-726-2551	80204	B1821BH063F200N
24	5	2510-01-290-2545	74841	TKG5322-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
24	6	5310-00-081-4219	96906	MS27183-12
24	7	5310-00-880-7744	96906	MS51967-5
24	8	5310-00-080-6004	96906	MS27183-14
24	9	5306-01-290-2684	74841	S-XA0244
24	10	2590-01-290-2534	74841	S-CF4399-54
24	11	5305-00-727-2283	80204	B1821BH063F150N
24	12	5365-01-198-7892	14109	S-CF0486-1
24	13	2590-01-291-4632	74841	S-CE3719-2
24	14	2530-01-198-7860	14109	S-CF0487-1
24	15	5310-00-823-8803	91340	D12420-6
24	16	5340-01-290-4889	74841	TKG5209-1
24	17	5310-00-080-6004	96906	MS27183-14
24	18	5310-00-935-9021	96906	MS51943-35
24	19	2590-01-290-2533	74841	SCF004399641
24	20	5340-01-330-5495	74841	SWA6215
24	21	5305-00-846-5703	80204	B1821BH038C300N
25	1	5310-00-269-4040	96906	MS51922-49
25	2		24617	455394
25	3	2510-01-292-3689	74841	U-CD0511-1
25	4	5340-01-290-8322	74841	U-CE8801-1
25	5	5306-01-290-2695	74841	U-XA0046-17
25	6	5310-00-061-4650	96906	MS51943-50
25	7	5310-01-292-5352	74841	U-XA0003-1
25	8	3120-01-229-1130	14109	U-XA0004
25	9	5310-01-198-9325	14109	U-XA0356-2
25	10	5306-01-289-9133	74841	U-XA0015
25	11	5306-01-290-3755	74841	U-XA0046-16
25	12	5306-01-290-4864	74841	ZKA8295
25	13	5340-01-290-2749	74841	U-CF1459-1
25	14	5305-00-726-2567	96906	MS90727-176
25	15	5365-01-291-0730	74841	U-CD4502-1
25	16	2530-01-294-7171	74841	A-XA0495-1
25	17	5310-00-809-8540	96906	MS27183-25
25	18	5310-00-241-6728	96906	MS35690-1424
26	1	5306-01-290-2685	74841	U-XA0016-X
26	2	5310-01-022-5552	30003	67A314C117-1
26	3	5365-01-290-2286	74841	U-XA0011
26	4	5310-00-404-1402	97907	9235215
26	5	5310-00-061-4650	96906	MS51943-50
26	6	3040-01-291-4627	74841	U-XA0026
26	7	2530-01-290-5683	74841	U-CF2640-1
27	1	4730-01-285-6074	74841	TKG5219-1
27	2	9905-00-999-7369	96906	MS53007-2
27	3	5340-01-290-2751	74841	TKG5290-1
27	4	9905-00-999-7370	96906	MS53007-1
27	5	5305-00-068-0509	80204	B1821BH025C125N
27	6	4730-01-268-7410	06721	10453110
27	7	5310-00-982-6580	96906	MS27183-1
27	8	5310-00-061-4650	96906	MS51943-31
27	9	5310-00-935-9021	96906	MS51943-35
27	10	5310-00-922-1794	96906	MS16213-63
27	11	5305-00-068-0511	80204	B1821BH038C125N
28	1	5310-00-880-7744	96906	MS51967-5
28	2	2540-00-262-8318	78680	100059
28	3	5340-01-290-2753	74841	TKG5215-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
28	4	5306-01-075-8519	96906	MS90725-36
29	1	2510-01-290-5020	74841	TKA9276
29	2	5305-01-210-4595	97403	13222E0109
29	3	5310-00-080-6004	96906	MS27183-14
29	4	5310-00-935-9021	96906	MS51943-35
30	1	5306-01-290-2693	7V618	ZKA9836
30	2	5310-00-004-5033	94231	3-07620-311
30	3	5310-00-732-0558	96906	MS51967-8
30	4	5340-01-290-8671	74841	TKG5230-1
30	5	5310-00-809-5998	96906	MS27183-18
30	6	5310-00-768-0318	21439	01857-007
30	7	5310-00-922-1794	96906	MS16213-63
30	8	5310-00-080-6004	96906	MS27183-14
30	9	5310-00-935-9021	96906	MS51943-35
30	10	5305-00-071-2069	80204	B1821BH050C150N
30	11	5305-00-725-2317	80204	B1821BH038C150N
30	12	2540-01-291-4558	74841	TKG5161-1
30	13	4710-01-285-6086	74841	TKG5198-1
30	14		74841	TKG5070-1
30	15	5305-00-071-2509	80204	B1821BH025C150N
30	16	5340-01-290-2726	74841	TKG5204-1
30	17	5360-00-862-2860	19204	8437243-2
30	18	5310-00-982-6580	96906	MS27183-1
30	19	5310-00-061-4650	96906	MS51943-31
31	1	2540-00-930-5303	19207	10959979
31	2	5310-00-732-0558	96906	MS51967-8
31	3	5310-00-922-1794	96906	MS16213-63
31	4	5305-01-210-4595	97403	13222E0109
31	5	5999-00-134-5844	81349	M83413/7-1
31	5	5340-00-976-9355	76545	21C100AMP
32	1	5340-01-290-8672	74841	TKG5230-2
32	2	5306-01-290-2693	7V618	ZKA9836
32	3	5310-00-004-5033	94231	3-07620-311
32	4	5310-00-935-9021	96906	MS51943-35
32	5	4710-01-285-6085	74841	TKG5228-1
32	6	5340-01-291-0261	73685	5697-C
32	7	5305-00-225-3843	80204	B1821BH025C100N
32	8	5310-00-982-6580	96906	MS27183-1
32	9	5310-00-061-4650	96906	MS51943-31
32	10		74841	TKA6754
33	1	5680-01-285-6078	13226	FVA9763BXB
33	2	5306-01-290-2209	49632	3029CP
33	3	5310-01-290-2218	49632	3031CP
33	4	5310-01-061-8727	13226	3030-BR
33	5	5340-01-289-7791	49632	3036CP
33	6	5330-01-246-1043	13226	3716 VT
33	7	2990-01-291-1277	49632	6234AL
33	8	5310-00-761-3706	96906	MS51967-15
33	9	5330-01-024-2311	13226	3119BN
33	10	2990-01-243-6393	13226	6238AL
33	11	2510-01-300-0244	13226	8046AL167
33	13		49632	3560-BN
33	14	5306-01-286-5426	13226	3139SL
33	15	5360-01-077-9428	49632	3129JCP
34	1	5307-01-289-9168	74841	TKA7579

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
34	2	5310-00-922-1794	96906	MS16213-63
34	3	5310-00-935-9021	96906	MS51943-35
34	4		74841	TKG5108-2
34	5	5315-01-171-0750	96652	21-09
34	6		04898	VKD5061-00
34	7		74841	VKA8995-3
35	1	5320-00-454-5156	07707	AD610ABS
35	2	9905-01-195-0663	12662	B475A
35	3	9905-00-205-2795	97783	GR011RED
36	1	7690-01-290-0175	74841	TKG0896-1
36	2	9905-01-198-9327	14109	X-CE7964-1
36A	1	5310-00-926-1835	96906	MS21083C3
36A	2	5310-00-615-1556	28527	2616950G001
36A	3	9905-01-379-5693	19207	12380149
36A	4	5310-00-761-6882	96906	MS51967-2
37	1	5320-00-891-9081	74841	TKA6640
37	2	9905-01-292-8867	74841	TKG5326-1
37	3	7690-01-297-7967	74841	TKG5470-1
37	4	9905-01-292-8868	74841	TKG5327-1
38	1	9905-01-298-8206	74841	TKG5469-1
38	2	5320-00-891-9081	74841	TKA6640
38	3	7690-01-290-6382	74841	TKA 9848
38	4	7690-01-290-0170	74841	TKA9551
38	5	7690-01-290-0171	74841	TKA9552
38	6	9905-01-292-8871	74841	TKG5334-1
38	7	9905-01-292-8870	74841	TKG5333-1
39	1	7690-01-290-0172	74841	TKA8654
39	2	7690-01-293-7623	74841	TKA 8650
40	1	9905-01-292-8869	74841	TKG5328-1
40	2	5320-00-987-2984	74841	TKG5332-1
40	3	5310-00-014-5850	45152	1379HX1
40	4	9905-01-292-8875	74841	TKG5335-1
40	5	9905-01-342-9148	74841	TKG5471-2
40	6	9905-01-345-3539	74841	TKG5560-1
40	7	9905-01-292-8873	74841	TKG5330-1
40	8	9905-01-292-8872	74841	TKG5329-1
41	1	7690-01-290-0173	74841	TKA8657
41	2	7690-01-290-0174	74841	T-KA8662
41A	1		19207	57K3087
41A	2		19207	12461902
41A	3		91816	9559B-2PP
41A	4	4730-01-038-2350	81349	M4109-09-08-00B
41A	5		81343	4-4-130137BA
41A	6		07282	16222
41A	7	5305-00-068-0500	96906	MS90725-3
41A	8	5310-00-582-5965	96906	MS35338-44
41A	9		19207	12461903
41A	10	5340-01-162-0430	75535	1023056
41A	11		16003	C43974-30.0
41A	12	5310-00-823-8804	96906	MS27183-9
41A	13	5305-00-071-2509	80204	B1821BH025C150N
41A	14	5310-00-905-0762	96906	MS51967-3
41A	15		81343	M4109-01-08-00B
41A	16		81343	4-4-130238BA
41A	17	4730-00-193-2709	96906	MS51846-24

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
41A	18		81343	4-4-4-4-130538BA
41A	19	4820-00-720-4488	30327	MS35782-2
41A	20	4730-00-196-1974	96906	MS51846-30
41A	21		81343	4-2-130239BA
41A	22		19207	12461906
41A	23		85274	2205
41A	24	4730-00-196-1973	96906	MS51846-28
41A	25		81343	4-4-4-130438BA
41A	26	4730-00-196-1975	96906	MS51846-31
41A	27		81343	4-4-140131
41A	28		93061	V406P-4
41A	29		98441	EM-25
41A	30	4730-00-196-1979	96906	MS51846-35
41A	31	5305-00-071-2233	96906	MS90725-18
41A	32	6685-00-827-7495	85274	2020
41A	33		81343	4-2-130139BA
41A	34		81343	2-2-130138
41A	35		18887	AVR-093H
41A	36		98441	EM-12
41A	37		19207	12461904
41A	38		91816	D559B-2M-6
41A	39		91816	D559B-2M-1
41A	39		19207	5598-2M-6
41A	40		81343	M4109-01-08-00B
41A	41		81343	4-4-4-140338BA
41A	42		81343	4-4-140137BA
41A	43		91816	9559B-2PP
41A	44		19207	12468902
41A	45	4730-01-038-2350	81349	M4109-09-08-00B
41A	46	4730-00-193-2709	96906	MS51846-24
41A	47		81343	4-4-4-4-140538BA
41A	48		81343	4-4-140238BA
41A	49		91816	259B-2PP.5
41A	50		19207	12461908
41A	51		19207	12461893
41A	52	5340-01-100-2536	19207	11668899
42	1		74841	STK40090-15
42	2	4730-01-062-2570	93061	68NTA-6-4
42	3		74841	STK40090-16
42	3		74841	TKG0591-7-3
42	4	5930-01-321-7107	79318	TKG5046-1
42	5	4730-00-908-3194	96906	MS35842-11
42	6		74841	TKG5304-1-1
42	7	4730-01-090-3237	93061	68NTA-8-4
42	8	4820-01-290-3666	74841	TKG5459-1
42	9	4730-01-289-9545	75364	TKG0510-13
42	10	4730-01-289-9559	75364	VKA7792
42	11	4730-01-096-9128	93061	68NTA-6-6
42	12		74841	STK40090-13
42	13	4730-00-277-7331	81343	6-6-6 130438B
42	14	4730-00-204-1993	56161	10503176
42	15	4730-00-230-1996	96906	MS51846-1
42	16		74841	STK40090-11
42	17		74841	STK40090-12
42	18	4730-00-196-0936	21450	115224

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
42	19	4730-00-011-2578	30327	109B1-4
42	20	4730-01-316-8836	32869	24388A3-4IN
42	21	4330-01-318-2805	32869	24388ACAP3-4IN
42	22	5330-00-811-1105	32869	20245
42	23	4730-01-318-9772	32869	24388ASCRN3-4IN
43	1	5310-00-014-5850	45152	1379HX1
43	2	5305-00-240-0194	96906	MS51849-76
43	3	4820-01-317-8235	74841	TKG5548-1
43	4	5340-01-291-5200	74841	TKG0149-2
43	5	6685-01-320-4820	81349	SG2ID1HPWPONCG
43	6		74841	STK40109-8
43	7	5325-01-318-2076	74841	FSP11-1-14
43	8	4730-01-091-8032	93061	68NTA-8-6
43	9	4730-00-196-0936	21450	115224
43	10	4820-00-054-0658	12145	C43974 X 30IN
43	11	4730-01-091-2809	93061	279NTA-8-6
43	12		74841	STK40109-7
43	13	4730-01-115-6643	93061	269NTA-8-8
43	14	4730-01-095-2034	93061	2225P-8
43	15		74841	STK40109-9
43	16	5340-01-291-9213	74841	TKG0149-3
43	17	4730-01-096-9127	93061	68NTA-6-8
43	18	5340-01-291-5199	74841	TKG0149-4
43	19		74841	STK40090-14
43	20	5340-01-290-8670	74841	TKG0149-1
43	21	5325-01-318-2077	74841	FSP11-1-18
43	22	4730-00-069-1187	93061	269NTA-6-4
43	23	4730-00-919-1803	79470	W05465
43	24	5310-00-934-9758	96906	MS35649-202
43	25	5310-00-045-3296	83298	B20500-11
44	1	5307-01-292-3715	74841	TKG5153-1
44	2	4820-01-290-3662	74841	TKA1003
44	3	5310-00-834-8732	96906	MS35691-33
44	4	5975-01-289-5976	04898	VKA8994
44	5	4010-00-171-4236	19207	7068272
45	1	5305-01-210-4595	97403	13222E0109
45	2	5310-00-935-9021	96906	MS51943-35
45	3	4820-01-291-5261	74841	TKG5276-1
45	4	4730-00-041-2651	21439	52C3861-3
45	5	5325-01-086-4841	23705	FSP11-1-3
45	6		74841	LKA3342-3
45	7	5340-01-291-5199	74841	TKG0149-4
45	8		74841	VKA0583-2
45	9		74841	LKA3342-6
45	10	4730-01-290-3846	74841	VKA3849
45	11	2590-01-054-0253	05443	20032-A
45	12		74841	LKA3342-4
45	13		74841	LKA3342-8
45	14		74841	VKA0583-4
45	15	5310-01-289-7782	05443	10268-A
45	16	5310-00-880-7744	96906	MS51967-5
45	17	5305-01-289-9143	05443	20040-A
45	18		74841	LKA3342-1
45	19		74841	VKA0583-3
45	20		74841	LKA3342-7

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
45	21		74841	LKA3342-5
45	22		74841	VKA0583-1
45	23		74841	LKA3342-2
46	1	5340-01-243-2769	81646	6880
46	2	4720-01-290-9709	74841	TKG5300-1
46	3	5340-01-289-7792	81646	5456
46	4	4720-01-290-4942	74841	TKG5301-1
46	5	2540-01-290-5696	13226	46269AL
46	6	5310-01-308-5778	13226	9Q5805
46	7	5310-01-308-5959	13226	9Q5847
46	8	5307-01-308-5984	13226	18626-FL
46	9	5330-00-165-1963	81349	M83248/1-245
46	10	4720-01-290-4933	74841	TKG5299-1
46	11	5306-01-290-2694	7V618	TKA7199
46	12	4730-00-840-0796	96906	MS27020-17
46	13	5330-00-899-4509	96906	MS27030-9
46	14	5340-01-289-9157	74841	VKA0619
46	15	5310-00-809-5998	96906	MS27183-18
46	16	5310-00-003-4094	01276	210104-8S
46	17	5310-00-998-8178	29930	120378
47	1	5305-00-071-2070	80204	B1821BH050C175N
47	2	5310-00-809-5998	96906	MS27183-18
47	3	5310-00-768-0318	21439	01857-007
47	4	3040-01-290-5025	74841	TKG5274-1
47	5	4730-01-289-9555	74841	TKG5277-1
47	6	4730-01-289-9533	74841	VKA1043
47	7	4730-01-289-9534	74841	VKA1081
47	8	5306-01-289-7826	74841	VKA7882
47	9	4710-01-290-9139	74841	TKG5193-1
47	10	5310-00-407-9566	96906	MS35338-45
47	11	5310-00-880-7744	96906	MS51967-5
47	12	4820-01-290-3414	74841	TKG5045-1
48	1	5305-00-726-2551	80204	B1821BH063F200N
48	2	5310-00-823-8803	91340	D12420-6
48	3	5310-00-241-6664	96906	MS51943-44
48	4	5340-01-290-2721	74841	TKG5188-1
48	5	5310-00-809-5998	96906	MS27183-18
48	6	5310-00-003-4094	01276	210104-8S
48	7	5310-00-998-8178	29930	120378
48	8	4710-01-291-4596	74841	TKG5169-1
48	9	4730-01-256-3734	79154	C-044-75-P-T0
48	10	4820-01-287-0736	79318	F635AD
48	11	5330-01-308-5870	79154	M-2
48	12	5306-01-290-2694	7V618	TKA7199
48	13	5310-00-080-6004	96906	MS27183-14
48	14	5310-00-935-9021	96906	MS51943-35
48	15	5330-01-081-5070	19207	11670914
48	16	4730-01-290-9198	79318	F445
48	17	5305-00-725-2317	80204	B1821BH038C150N
48	18	5310-00-732-0558	96906	MS51967-8
48	19	4820-01-290-4917	13226	WD401-AL-V
48	20	5305-00-846-5703	80204	B1821BH038C300N
48	21	4730-00-640-6156	96906	MS27028-17
48	22	5330-00-899-4509	96906	MS27030-9
48	23	4730-01-289-9566	74841	TKG5067-1

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
49	1	4820-00-595-5104	79318	4051-17
49	2	5320-00-584-9078	96906	MS20470A4-4
49	3	4820-01-119-4886	79318	4051-13
49	4	5305-01-164-1601	79318	3706000-518-12
49	5	5330-00-565-4293	79318	4021S2M3
49	6	5310-01-119-3088	79318	2712519
49	7	3040-01-118-5954	16069	2712520
49	8	5340-01-119-1830	79318	4051-8
49	9	5310-00-045-4007	96906	MS35338-41
49	10	5306-00-225-8499	96906	MS90725-34
49	11	4730-00-277-6324	96906	MS27769-4
49	12	4730-01-120-8048	79318	2712515
49	13	5365-01-290-8307	79318	2721205-1
49	14	5310-00-167-0721	96906	MS35333-41
49	16	5305-00-226-4831	80204	B1821BH031C150N
49	17	5360-01-118-2274	79318	4051-7-5
49	18	5310-00-829-9981	96906	MS35649-2312
49	19	5315-01-186-0829	96906	MS171656
49	20	3040-01-118-5519	79318	2712518
49	21	3040-01-180-3166	79318	2712524-1
49	22	5330-01-290-8877	79318	86-0062-N517-8
49	23	5330-01-119-1372	79318	2712522-1
49	24	5330-00-250-0226	96906	MS29513-212
49	25	3040-01-157-3343	79318	2712521-1
49	26	3040-01-158-9242	45681	2712517-1
49	27	5310-00-167-0823	88044	AN960-816
49	28	5330-00-527-8116	96906	MS29513-252
49	29	4820-00-595-5113	79318	4051-2-5
49	30	4820-01-119-9189	79318	4631062-250
49	31	5330-01-119-1339	79318	2731616-1
49	32	5340-01-119-7121	79318	4051-11-1
49	33	5310-00-596-8173	79318	5105-18
49	34	3040-01-118-4154	79318	4051-9
49	35	5360-01-119-1338	79318	2661177
49	36	5360-00-548-6741	79318	4051-11-2
49	37	5330-00-846-0501	96906	MS29561-118
49	38	5330-00-531-2924	96906	MS29513-263
49	39	4810-01-190-5606	79318	4051-1
49	40	5330-00-248-3839	96906	MS29513-111
49	40	4820-00-552-7809	79318	4051-5
49	42	5330-00-263-8032	96906	MS29512-10
49	43	5365-00-278-8803	88044	AN814-10D
50	1	4820-00-549-4746	79318	2681193
50	2	5305-01-157-7390	03038	LP503-6-8
50	3	5310-00-773-7624	80205	NAS620C6
50	4	5340-01-170-3165	79318	2681197
50	5	4930-00-878-1308	79318	2633219
50	6	5365-00-725-0969	96906	MS16633-4018
50	7	5310-00-167-0812	88044	AN960C10L
50	8	5360-01-160-0505	79318	2681196
50	9	4730-01-191-6528	79318	2681194
50	10	4820-01-173-8502	79318	2813374-101
51	1	2910-01-035-4171	19207	11621224
51	2	5305-00-984-5674	96906	MS35206-294
51	3	4030-00-954-8801	96906	MS87006-43

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FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
51	4	4010-00-958-0633	81348	RR-C-271 TY2 CL7
51	4			-16
51	5		19207	11621224-1
51	6	5305-00-984-5674	19207	11621224-2
51	7	4030-00-948-7315	96906	MS87006-33
51	8	4730-00-847-0036	29930	44463491

APPENDIX G
LIST OF MANUFACTURED ITEMS

Section I. INTRODUCTION

G-1. SCOPE.

a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated.

b. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the paragraph which covers fabrication criteria.

c. Manufacturing instructions for the Vapor Integrity Test Fixture, which has no assigned Part Number, are found in paragraph G-27.

d. Only items requiring complicated manufacturing instructions are illustrated.

e. All bulk materiels needed for manufacture of an item are listed by National Stock Number (NSN), part number, or specification number in the manufacturing instructions.

f. All dimensions given in Section II, *Manufacturing Instructions,* are in standard units.

Table G-1. Manufactured Items Part Number Cross-reference.

Part Number	Paragraph Number	Part Number	Paragraph Number	Part Number	Paragraph Number
LKA3332-1	G-4	STK14373-1	G-7	STK40090-12	G-23
LKA3332-2	G-3	STK14373-2	G-7	STK40090-13	G-23
LKA3332-3	G-6	STK14373-3	G-7	STK40090-14	G-23
LKA3332-4	G-5	STK14373-4	G-7	STK40090-15	G-23
LKA3334-1	G-2	STK14373-5	G-7	STK40090-16	G-23
LKA3334-2	G-2	STK14373-7	G-7	STK40090-17	G-16
LKA3334-3	G-2	STK14374-1	G-8	STK40109-1	G-19
LKA3334-4	G-2	STK14374-2	G-8	STK40109-2	G-19
LKA3334-5	G-2	STK14374-3	G-8	STK40109-3	G-19
LKA3342-1	G-26	STK14375-1	G-9	STK40109-4	G-19
LKA3342-2	G-26	STK14375-2	G-9	STK40109-5	G-19
LKA3342-3	G-26	STK14375-3	G-9	STK40109-7	G-24
LKA3342-4	G-26	STK14375-4	G-9	STK40109-8	G-24
LKA3342-5	G-26	STK14376-1	G-15	STK40109-9	G-24
LKA3342-6	G-26	STK14377-1	G-13	TKG1336-6-1	G-14
LKA3342-7	G-26	STK14377-2	G-13	TKG1336-6-2	G-14
LKA3342-8	G-26	STK14377-3	G-13	TKG5304-1-1	G-22
LKA9655-1	G-11	STK40090-1	G-18	TKG5320-1-3	G-16
LKA9655-2	G-11	STK40090-2	G-18	TKG5320-1-4	G-10
LKA9655-3	G-17	STK40090-3	G-18	VKA0583-1	G-25
STK14372-1	G-12	STK40090-4	G-18	VKA0583-2	G-25
STK14372-2	G-12	STK40090-5	G-18	VKA0583-3	G-25
STK14372-3	G-12	STK40090-6	G-18	VKA0583-4	G-25
STK14372-4	G-12	STK40090-7	G-18	VKA8995-1	G-21
STK14372-5	G-12	STK40090-8	G-18	VKA8995-2	G-20
STK14372-6	G-12	STK40090-9	G-18	VKA8995-3	G-20
STK14372-7	G-12	STK40090-10	G-18		
STK14372-8	G-12	STK40090-11	G-23		

Section II. MANUFACTURING INSTRUCTIONS

G-2. CHASSIS ELECTRICAL CONDUITS.

a. Fabricate from QQA-200/1, 5/8 in. outside diameter X .049 wall tubing.

b. Cut to 17 ft. 6 in. long to make Part Number LKA3334-1.

c. Cut to 18 ft. 4 in. long to make Part Number LKA3334-2.

d. Cut to 4 ft. 4 in. long to make Part Number LKA3334-3.

e. Cut to 18 ft. 4 in. long to make Part Number LKA3334-4.

f. Cut to 17 ft. 6 in. long to make Part Number LKA3334-5.

g. Apply paint that conforms to MIL-C-53039 or MIL-C-46168.

G-3. TRIPLE CLEARANCE LIGHT ASSEMBLY ELECTRICAL CONDUIT.

a. Fabricate from 8588, 3/8 in. outside diameter X .035 wall tubing.

b. Cut to 11 ft. 1 in. long to make Part Number LKA3332-2.

c. Apply paint that conforms to MIL-C-53039 or MIL-C-46168.

G-4. FRONT CLEARANCE AND MARKER LIGHT ELECTRICAL CONDUIT.

a. Fabricate from 8588, 3/8 in. outside diameter X .035 wall tubing.

b. Cut to 4 ft. 6 in. long to make Part Number LKA3332-1.

c. Apply paint that conforms to MIL-C-53039 or MIL-C-46168.

G-5. SIDE CLEARANCE AND MARKER LIGHT ELECTRICAL CONDUIT.

a. Fabricate from 8588, 3/8 in. outside diameter X .035 wall tubing.

b. Cut to 1 ft. long to make Part Number LKA3332-4.

c. Apply paint that conforms to MIL-C-53039 or MIL-C-46168.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

G-6. CONVOY WARNING LIGHT ELECTRICAL CONDUIT.

a. Fabricate from 8588, 3/8 in. outside diameter X .035 wall tubing.

b. Cut to 11 ft. 1 in. long to make Part Number LKA3332-3.

c. Apply paint that conforms to MIL-C-53039 or MIL-C-46168.

G-7. BROWN WIRES.

a. Fabricate from M22759/14-14-1, #14 gage wire, brown.

b. Cut to 5 ft. 6 in. long to make Part Number STK14373-1.

c. Cut to 6 in. long to make Part Number STK14373-2.

d. Cut to 5 ft. 4 in. long to make Part Number STK14373-3.

e. Cut to 19 ft. 4 in, long to make Part Number STK14373-4.

f. Cut to 18 ft. 6 in. long to make Part Number STK14373-5.

g. Cut to 13 ft. 1 in. long to make Part Number STK14373-7.

h. When installed in conduit, 6 in. on each end should extend past conduit ends.

G-8. GREEN WIRES.

a. Fabricate from M22759/14-14-5, #14 gage wire, green.

b. Cut to 1 ft. 6 in. long to make Part Number STK14374-1.

c. Cut to 19 ft. 4 in. long to make Part Number STK14374-2.

d. Cut to 18 ft. 6 in. long to make Part Number STK14374-3.

e. When installed in conduit, 6 in. on each end should extend past conduit ends.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

G-9. RED WIRES.

a. Fabricate from M22759/14-14-2, #14 gage wire, red.

b. Cut to 6 in. long to make Part Number STK143751.

c. Cut to 5 ft. 4 in. long to make Part Number STK14375-2.

d. Cut to 19 ft. 4 in. long to make Part Number STK14375-3.

e. Cut to 18 ft. 6 in. long to make Part Number STK14375-4.

f. When installed in conduit, 6 in. on each end should extend past conduit ends.

G-10. GRAY WIRE.

a. Fabricate from GPT 14 AWG, #14 gage wire, gray.

b. Cut to 18 ft. 6 in. long to make Part Number TKG5320-1-4.

C. When installed in conduit, 6 in. on each end should extend past conduit ends,

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G-11. ORANGE WIRES.

a. Fabricate from GPT 14 AWG, #14 gage wire, orange.

b. Cut to 18 ft. 6 in. long to make Part Number LKA9655-1.

C. Cut to 19 ft. 4 in. long to make Part Number LKA9655-2.

d. When installed in conduit, 6 in. on each end should extend past conduit ends.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

G-12. BLACK WIRES.

a. Fabricate from M22759/14-14-8, #14 gage wire, black.

b. Cut to 18 ft. 6 in. long to make Part Number STK14372-1.

c. Cut to 19 ft. 4 in. long to make Part Number STK14372-2.

d. Cut to 1 ft. 6 in. long to make Part Number STK14372-3.

e. Cut to 2 ft. long to make Part Number STK14372-4.

f. Cut to 1 ft. 6 in. long to make Part Number STK14372-5.

g. Cut to 1 ft. 6 in. long to make Part Number STK14372-6.

h. Cut to 12 ft. 1 in. long to make Part Number STK14372-7.

i. Cut to 5 ft. 4 in. long to make Part Number STK14372-8.

j. When installed in conduit, 6 in. on each end should extend past conduit ends.

G-13. YELLOW WIRES.

a. Fabricate from M22759/14-14-4, #14 gage wire, yellow.

b. Cut to 18 ft. 6 in. long to make Part Number STK14377-1.

c. Cut to 19 ft. 4 in. long to make Part Number STK14377-2.

d. Cut to 1 ft. 6 in. long to make Part Number STK14377-3.

e. When installed in conduit, 6 in. on each end should extend past conduit ends.

G-14. BLUE WIRES.

a. Fabricate from GPT 12 AWG, #12 gage wire, blue.

b. Cut to 18 ft. 6 in. long to make Part Number TKG1336-6-1.

C. Cut to 19 ft. 4 in. long to make Part Number TKG1336-6-2.

d. When installed in conduit, 6 in. on each end should extend past conduit ends.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

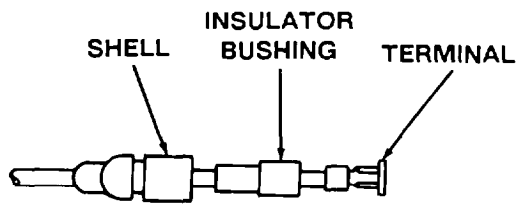
G-15. CONVOY WARNING LIGHT BLUE WIRE.

a. Fabricate from STK14376, #14 gage wire, blue.

b. Cut to 12 ft. 1 in. long to make Part Number STK14376-1,

c. When installed in conduit, wire ends without fittings should extend 6 in. past conduit ends.

G-16. GRAY WIRE ASSEMBLIES.



a. Fabricate from GPT 14 AWG, #14 gage wire, gray.

b. Cut to 20 ft. 1 in. long to make Part Number TKG5320-1-3.

c. Install terminal, Part Number 8338564; insulator bushing, Part Number 8338562: and shell, Part Number 8338561 to one end of each gray wire.

d. When installed in conduit, wire ends without fittings should extend 6 in. past conduit ends.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

G-17. REAR CONDUIT ORANGE WIRE ASSEMBLY.

a. Fabricate from GPT 14 AWG, #14 gage wire, orange.

b. Cut to 6 ft. long to make Part Number LKA9655-3.

c. Install terminal, Part Number 8338564: insulator bushing, Part Number 8338562: and shell, Part Number 8338561 to one end of orange wire (see illustration for G-13).

d. When installed in conduit, wire end without fittings should extend 6 in. past conduit ends.

G-18. BRAKE AIR LINES.

a. Fabricate from STK40090, 3/8 in. outside diameter nylon tubing.

b. Cut to 10 in. long to make STK40090-1.

c. Cut to 11 in. long to make STK40090-2

d. Cut to 3 ft. 1 in. long to make STK40090-3.

e. Cut to 3 ft. 2 in. long to make STK40090-4.

f. Cut to 3 ft. 5 in. long to make STK40090-5.

g. Cut to 2 ft. 11 in. long to make Part number STK40090-6.

h. Cut to 3 ft. long to make Part Number STK40090-7.

i. Cut to 27 ft. 3 in. long to make Part Number STK40090-8.

j. Cut to 7 ft. 9 in. long to make Part Number STK40090-9.

k. Cut to 5 ft. long to make Part Number STK40090-10.

l. Cut to 4 ft. 10 in. long to make Part Number STK40090-17.

G-19. BRAKE AIR LINES.

a. Fabricate from STK40109, ½ in. outside diameter nylon tubing.

b. Cut to 5 ft. 2 in. long to make Part Number STK40109-1.

c. Cut to 33 ft. long to make Part Number STK40109-2.

d. Cut to 3 ft. 6 in. long to make Part Number STK40109-3.

e. Cut to 4 ft. 7 in. long to make Part Number STK40109-4.

f. Cut to 1 ft. 10 in. long to make Part Number STK40109-5.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

G-20. GRABHANDLE AND CONVOY WARNING LIGHT CABLES.

a. Fabricate from MIL-W-83420, 1/16 in. diameter 7 X 7 cable.

b. Cut to 1 ft. 7 in. long to make Part Number VKA8995-2.

c. Cut to 10 ft. ¾ in. long to make Part Number VKA8995-3.

G-21. GROUND WIRE.

a. Fabricate from MIL-W-83420, 1/16 in. diameter 7 X 7 cable.

b. Cut to 6 ft. long to make Part Number VKA8995-1.

G-22. JET LEVEL SENSOR TUBING.

a. Fabricate from TKG5304-1, 1 in. inside diameter X 1/8 in. wall neoprene tubing.

b. Cut to 4 ft. long to make Part Number TKG5304-1-1.

G-23. JET LEVEL SENSOR TUBING.

a. Fabricate from STK40090, 3/8 in. outside diameter nylon tubing,

b. Cut to 1 ft. 8 in. long to make Part Number STK40090-11.

c. Cut to 2 ft. 10 in. long to make Part Number STK40090-12.

d. Cut to 1 ft. 2 in. long to make Part Number STK40090-13.

e. Cut to 5 ft. long to make Part Number STK40090-14.

f. Cut to 34 ft. 5 in. long to make Part Number STK40090-15.

g. Cut to 34 ft. 5 in. long to make Part Number STK40090-16.

G-24. PRECHECK TUBING.

a. Fabricate from STK40109, ½ in. outside diameter nylon tubing.

b. Cut to 25 ft. 6 in. long to make Part Number STK40109-7.

c. Cut to 3 ft. long to make Part Number STK40109-8.

d. Cut to 5 ft. 1 in. long to make Part Number STK40109-9.

Section II. MANUFACTURING INSTRUCTIONS (Con't)

G-25. EMERGENCY VALVE CABLES.

a. Fabricate from MILW83420 Type 1-A1, 3/16 in. diameter 7 X 19 cable.

b. Cut to 14 ft. long to make Part Number VKA0583-1.

c. Cut to 26 ft. 6 in. long to make Part Number VKA0583-2.

d. Cut to 21 ft. long to make Part Number VKA0583-3.

e. Cut to 21 ft. 6 in. long to make Part Number VKA0583-4.

G-26. TUBING FOR EMERGENCY VALVE CABLES.

a. Fabricate from Part Number STBW, 3/8 in. outside diameter X .028 wall tubing.

b. Cut to 5 ft. 8 in. long to make Part Number LKA3342-1.

c. Cut to 6 ft. long to make Part Number LKA3342-2.

d. Cut to 11 ft. 5 in. long to make Part Number LKA3342-3.

e. Cut to 12 ft. 5 in. long to make Part Number LKA3342-4.

f. Cut to 8 ft. long to make Part Number LKA3342-5.

g. Cut to 11 ft. long to make Part Number LKA3342-6.

h. Cut to 8 ft. 6 in. long to make Part Number LKA3342-7.

i. Cut to 12 ft. long to make Part Number LKA3342-8.

j. Apply paint that conforms to MIL-C-53039 or MIL-C-46168.

[Paragraph G-27 Deleted]

APPENDIX H
TORQUE LIMITS

H-1. SCOPE.

This appendix lists standard torque values and provides general information for applying torque. Special torque values and tightening sequences are indicated in the maintenance procedures for applicable components.

H-2. GENERAL.

a. Always use the torque values listed in Table H-l when the maintenance procedure does not give a specific torque value.

b. Unless otherwise indicated, standard torque tolerance shall be ± 10%.

c. Torque values listed are based on clean, dry threads. Reduce torque by 10% when engine oil is used as a lubricant.

d. If replacement fasteners are of higher grade than originally supplied, use torque specifications for the original. This will prevent equipment damage due to over torquing.

Table H-1. Standard Torque Specifications.

Capscrew Site	Inches Thread	TORQUE					
		SAE Grade 2		SAE Grade 5		SAE Grade 8	
		lb.-In.	N•m			lb.-In.	N•m
¼	20	50-60	6-7			108-144	12-16
¼	28	60-70	7-8			108-144	12-16
		Grade 2		SAE Grade 5		SAE Grade, 8	
		lb.-ft.	N•m	lb.-ft.	N•m	lb.-ft.	N•m
5/16	18	9-12	12-16	13-17	18-23	20-25	27-34
5/16	24	9-12	12-16	15-20	20-27	20-25	27-34
3/8	16	15-20	20-27	20-30	27-41	35-45	48-61
3/8	24	18-24	24-33	25-35	34-48	35-45	48-61
7/16	14	20-30	27-41	40-50	54-68	50-70	68-94
7/16	20	25-35	34-48	45-55	61-75	60-80	81-109
½	13	35-50	48-68	55-70	75-95	80-100	108-136
½	20	40-55	54-75	65-85	88-115	90-110	122-149
9/16	12	50-65	68-88	80-100	108-136	100-140	136-190

Table H-1. Standard Torque Specifications (Con't).

Capscrew Size	Inches Thread	TORQUE					
		SAE Grade 2		SAE Grade 5		SAE Grade 6	
		lb.-ft.	N•m	lb.-ft.	N•m	lb.-ft.	N•m
9/16	18	55-75	75-102	80-110	108-149	120-150	163-203
5/8	11	70-90	95-122	120-140	163-190	190-220	256-298
5/8	18	80-100	108-136	120-140	163-190	190-220	258-298
3/4	10	120-160	163-217	200-240	271-325	300-340	407-461
3/4	16	140-180	190-244	200-240	271-325	300-340	407-461
7/8	9 or 14	110-140	149-190	340-380	461-515	500-550	678-746
1	8 or 12	160-200	217-271	500-550	678-746	800-850	1085-1153

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter=10 Millimeters=0.01 Meters=0.3937 Inches
1 Meter=100 Centimeters=1000 Millimeters=39.37 Inches
1 Kilometer=1000 Meters=0.621 Miles

WEIGHTS

1 Gram=0.001 Kilograms=1000 Milligrams=0.035 Ounces
1 Kilogram=1000 Grams=2.2 Lb
1 Metric Ton=1000 Kilograms=1 Megagram=1.1 Short Tons

LIQUID MEASURE

1 Milliliter=0.001 Liters=0.0338 Fluid Ounces
1 Liter=1000 Milliliters=33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter=100 Sq Millimeters=0.155 Sq Inches
1 Sq Meter=10,000 Sq Centimeters=10.76 Sq Feet
1 Sq Kilometer=1,000,000 Sq Meters=0.0386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter=1000 Cu Millimeters=0.06 Cu Inches
1 Cu Meter=1,000,000 Cu Centimeters=35.31 Cu Feet

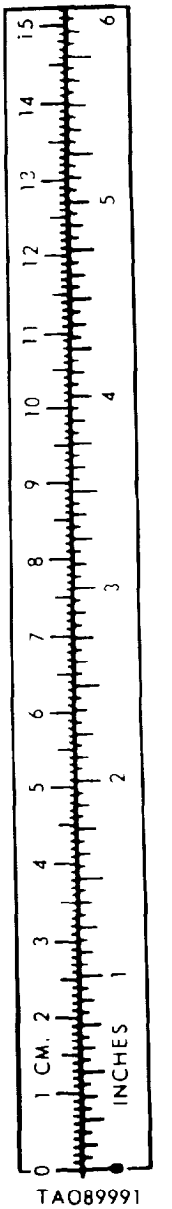
TEMPERATURE

5/9 (°F − 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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